HUYGENS

A new node in the global science network

Radboud University Nijmegen

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HUYGENS - A new node in the global science network

We are proud to present the Huygens building: eight purpose-built wings that will support the ambitions of new generations of science students and researchers, leading to truly exciting new discoveries. Eight wings that will take us far beyond the frontiers of today's science.

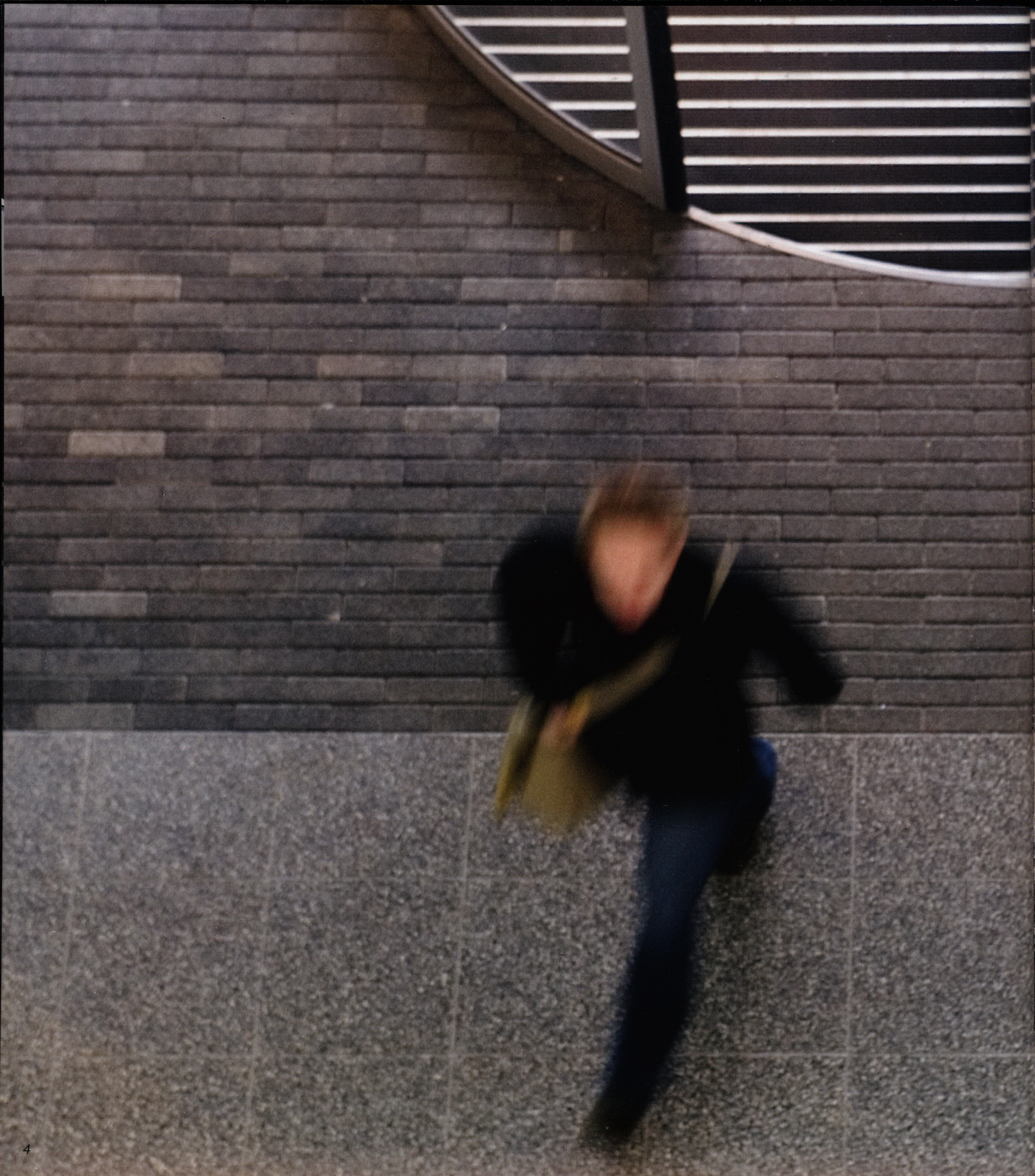
This building ushers in a new era for our faculty – one in which fundamental research and life sciences come together and science is ever more at the centre of society, attracting more students each year and underpinning the constant expansion of our research horizons.

We live in a time of rapidly expanding scientific networks, which are becoming ever more powerful and ever more international. This design of this open, transparent building will expressly facilitate this process, stimulating meetings and collaboration between students, researchers and staff. This purpose-built, cross-disciplinary environment creates an ideal context for generating and disseminating valuable new scientific ideas.

While some will say we are merely opening a building in a historical city in the east of a small European country, we know we are doing far more: Radboud University Nijmegen is creating a new node in the global science network.

As this booklet shows, our new building has a wealth of fascinating faces. From the inner world of the smallest particles to the outer reaches of the universe, from the complexity of biomolecules to ecological networks, it will ensure that Nijmegen remains at the cutting edge of science.

Professor Jan Kuijpers
Dean of the Faculty of Science



Education

Towards a dynamic, scientific career

It's obvious the moment you approach the rejuvenated part of our campus: the architecture of the new Huygens building expresses the fact that the education and research within it are closely intertwined. This impression becomes even stronger once you're inside – the whole structure is transparent. Walk along the corridors and you'll see classes on the principles of evolution, the structure of proteins, Fermat's theorem, programming a software agent, or the origins of a binary star.

You'll see students at work in laboratories and computer rooms. And these students can see researchers working in their offices and labs. The buzz from the corridors below, where the lecture rooms are located, rises several stories until it reaches the glass roof – as if to remind everyone in the building of one of our core responsibilities: education.

We're convinced that education and research should be closely interrelated. Teaching here is characterized by small groups, creating plenty of scope for exchanging the latest research techniques and results.

Interdisciplinary insight

Student council member Koen van der Dungen: "As a student, it takes some time to get the full picture about the research that's done here. Of course, you hear, see and read things which give you a good idea. But it's only towards the end of your Bachelor's programme, when you're preparing to start on your Master's, that you're properly introduced to the research departments.

"Personally, I think that doing research is both important and fun. But, even though most students choose to do research during their Master's, many of them stop once they've got their degree. That's because there are so many other directions a graduate can choose from. And that's one of the Faculty's strong points: rather than training you for a specific job, it prepares you for a broad career, based on universal academic skills, such as the use of a logical, scientific approach and the capacity for reflection and abstraction.

"One initiative was the introduction of general science lectures. The idea is to offer optional faculty-wide courses that cover highlights of the Faculty's research. These give the students a much better idea of what's going on, even if it isn't part of their own studies."

This approach is explained by the Dean, Prof. Jan Kuijpers, as follows: "Today's students will be the future ambassadors for science, so we believe their education should be wider than their chosen subject. When you go out into the world as a Master of Science, you should know about concepts and developments in related areas of science. These lectures also lay the foundations for later interdisciplinary collaboration."

The Nijmegen approach

The Faculty – now the second largest of its kind in the Netherlands – provides small-scale classes and tutor-based education, a policy that led to very good evaluations during recent educational inspection rounds. "Somehow this is a reflection of the fact that everyone knows everyone else," says Koen van Dungen, "and I don't just mean the students. There's also close interaction between students and teaching staff, in class and out. For example, when we're having a drink together, you'll often find lecturers there as well."

Based as it is on clear communication, educational reform and personal support, our strategy to recruit new students has been remarkably successful.

Over 400 new students join us each year, and our graduate output is above average. One important factor contributing to this success is what we call integrated chain management: using academic training as a link between secondary school and a career.

From year 4 of secondary school onwards, pupils with a suitable profile regularly receive information about studying at the University's science faculty. This takes the form of various counselling activities, master classes, internet sites and a special magazine, *B for You*.

The Bachelor's training in Nijmegen, which is deliberately kept broad, is divided into four clusters of connected studies: Bio-Sciences; Molecular Sciences; Information Sciences; and Physics, Astronomy and Mathematics. In the first year, students learn basic academic attitudes and skills and get thoroughly acquainted with the subject they've chosen. In this period they can, if necessary, switch to another option within the cluster, once their true area of interest becomes clear.

First-year students can improve their performance with the help of experienced secondary school teachers, who have the role of tutors. In order to identify problems at an early stage and discuss them with the university lecturers, these tutors attend first-year lectures. Students often work together, writing notes, preparing presentations, solving problems and doing research.

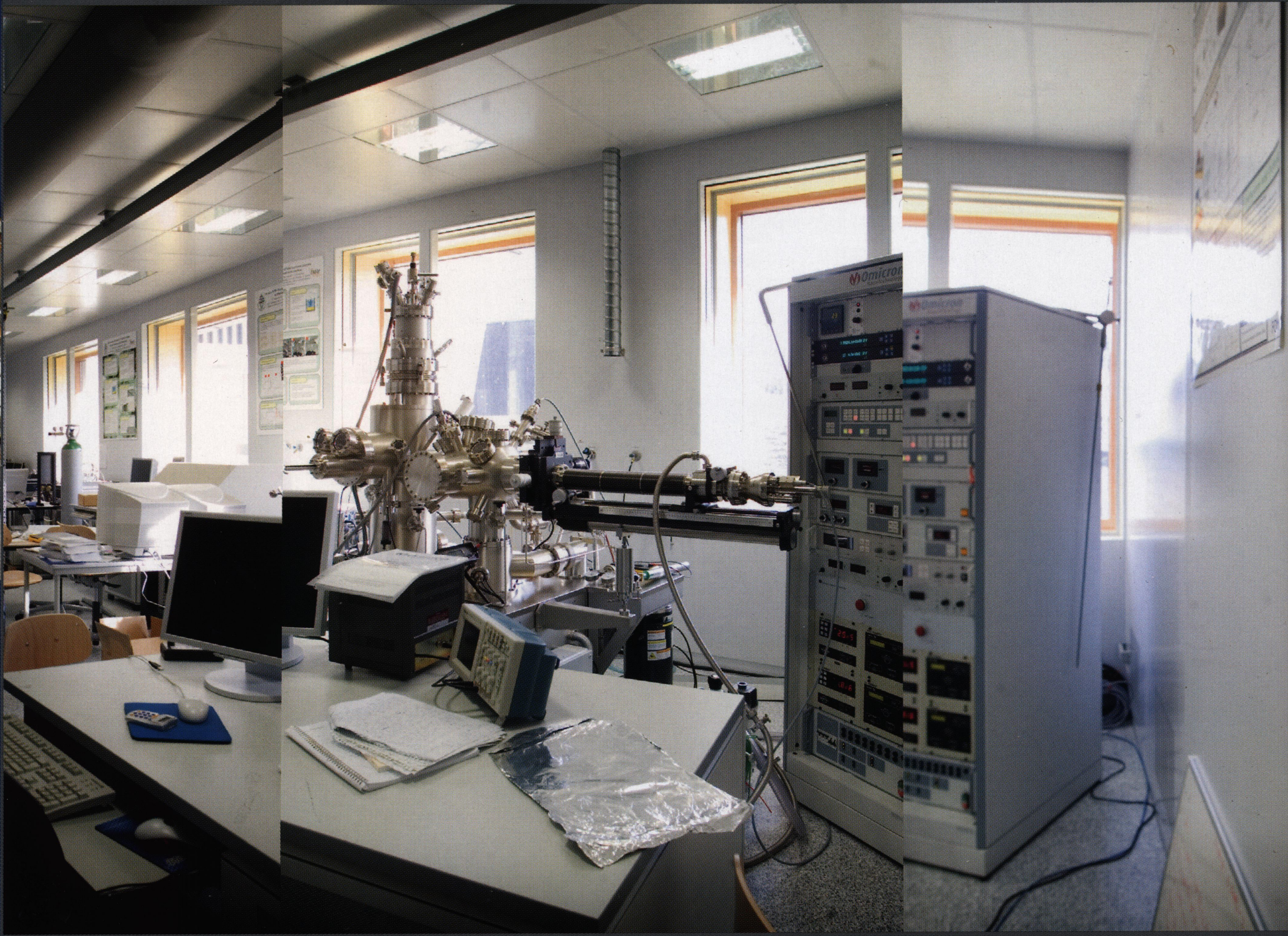
Irrespective of their specialisation during their majors, Master's students who are about to graduate select a specially designed career-oriented profile to prepare them for their future profession. The four options are research, education, communication and management & application. As a result, our students are very much in demand once they graduate.

A home from home

"Student societies play a prominent role in our faculty – nearly everyone's a member," says Koen van Dungen. "It's not like other faculties, where people often join because they'll be entitled to a discount on books. Until recently, our society didn't even sell books, yet everyone was a member! Societies here are very active, and not just socially. You'll find them organising study-related activities – anything from small colloquia to large symposia, and from day excursions to extensive study trips abroad. They also play an important role in monitoring the quality of education."

Another activity that's entirely run by the students is the science-related Companies Fair, which strengthens the links between students and the business community. Each year it attracts a large number of interested companies and their recruiters, whose animated exchanges with students provide tangible proof of the strong demand for our graduates.

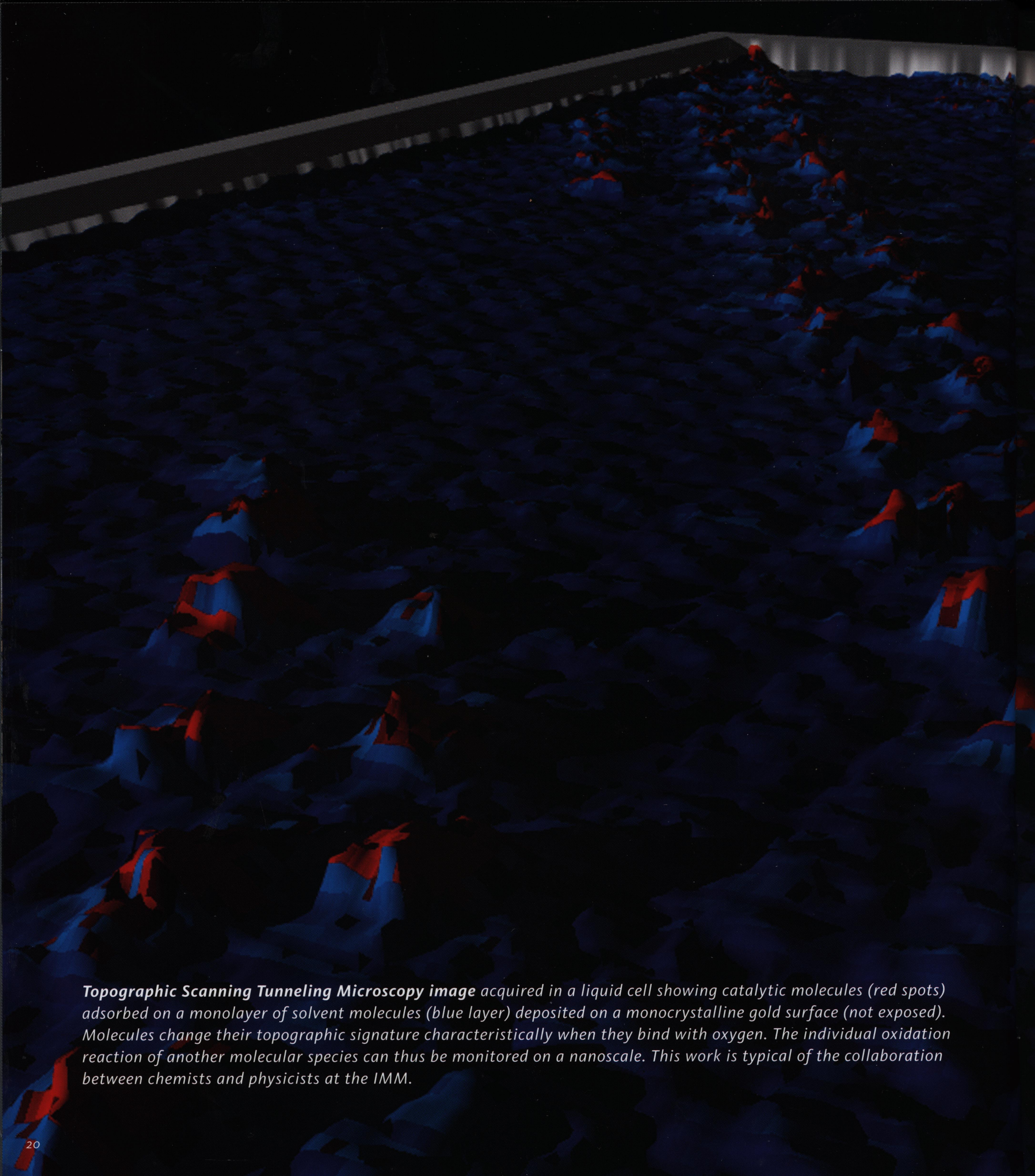
This is hardly surprising. After five years of study, they've developed enormously – not just in academic terms, but also personally, socially and professionally. In short, they're now ready to take up their roles in the global science network.



The Institute for Molecules and Materials (IMM) works at the interface between physics and chemistry, conducting research on functional molecular structures and materials. There is a strong emphasis on understanding and controlling complexity in order to be able to design new functionality in these nanosystems.

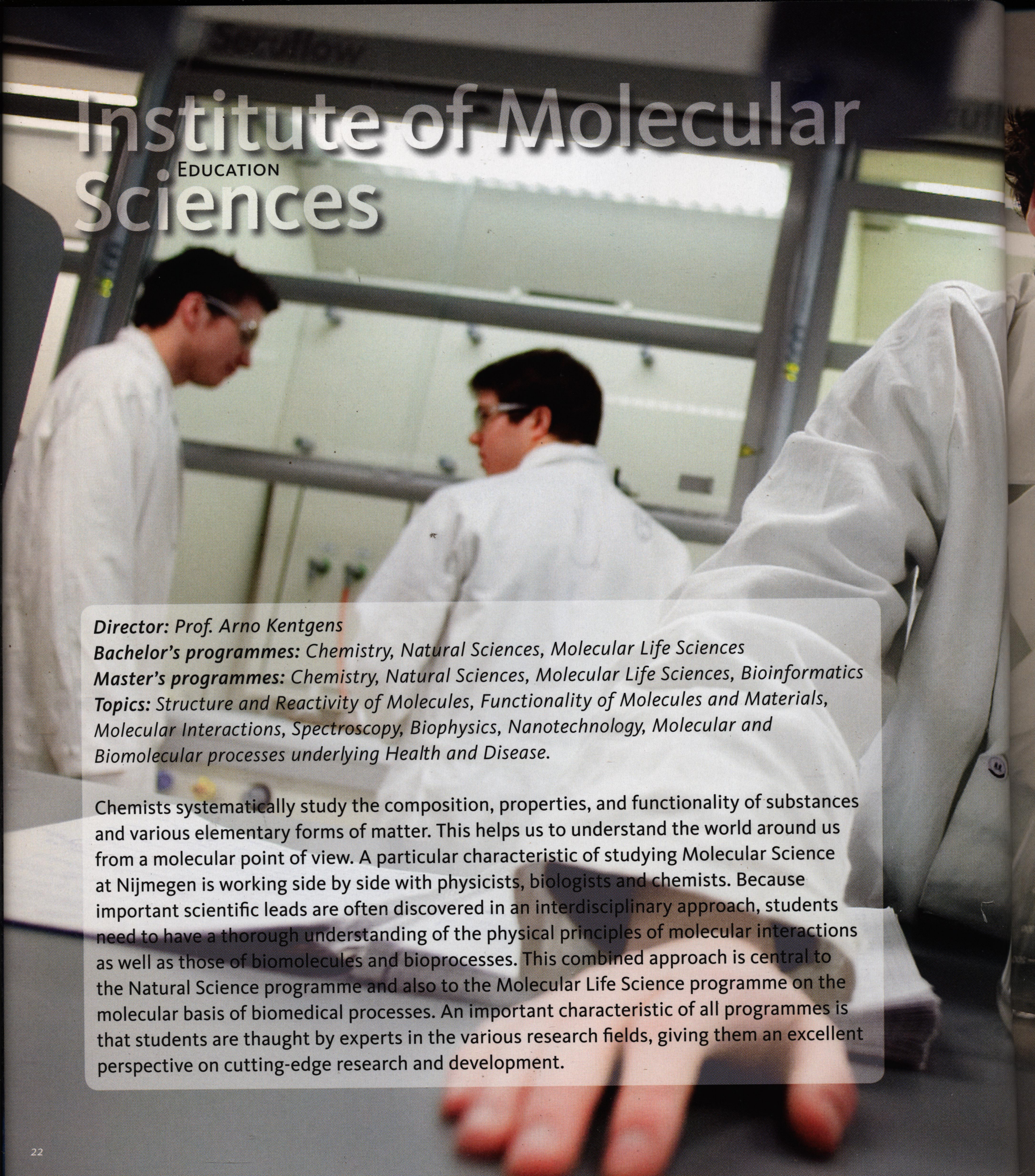
IMM

Prof. Roeland Nolte, IMM Director



Topographic Scanning Tunneling Microscopy image *acquired in a liquid cell showing catalytic molecules (red spots) adsorbed on a monolayer of solvent molecules (blue layer) deposited on a monocrystalline gold surface (not exposed). Molecules change their topographic signature characteristically when they bind with oxygen. The individual oxidation reaction of another molecular species can thus be monitored on a nanoscale. This work is typical of the collaboration between chemists and physicists at the IMM.*

Institute of Molecular Sciences



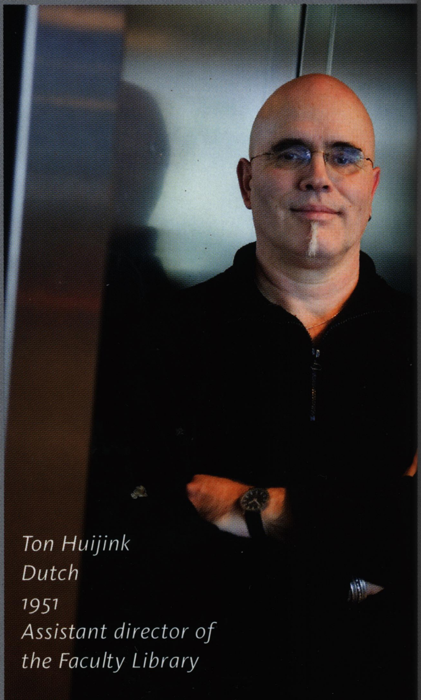
***Director:** Prof. Arno Kentgens*
***Bachelor's programmes:** Chemistry, Natural Sciences, Molecular Life Sciences*
***Master's programmes:** Chemistry, Natural Sciences, Molecular Life Sciences, Bioinformatics*
***Topics:** Structure and Reactivity of Molecules, Functionality of Molecules and Materials, Molecular Interactions, Spectroscopy, Biophysics, Nanotechnology, Molecular and Biomolecular processes underlying Health and Disease.*

Chemists systematically study the composition, properties, and functionality of substances and various elementary forms of matter. This helps us to understand the world around us from a molecular point of view. A particular characteristic of studying Molecular Science at Nijmegen is working side by side with physicists, biologists and chemists. Because important scientific leads are often discovered in an interdisciplinary approach, students need to have a thorough understanding of the physical principles of molecular interactions as well as those of biomolecules and bioprocesses. This combined approach is central to the Natural Science programme and also to the Molecular Life Science programme on the molecular basis of biomedical processes. An important characteristic of all programmes is that students are thaught by experts in the various research fields, giving them an excellent perspective on cutting-edge research and development.

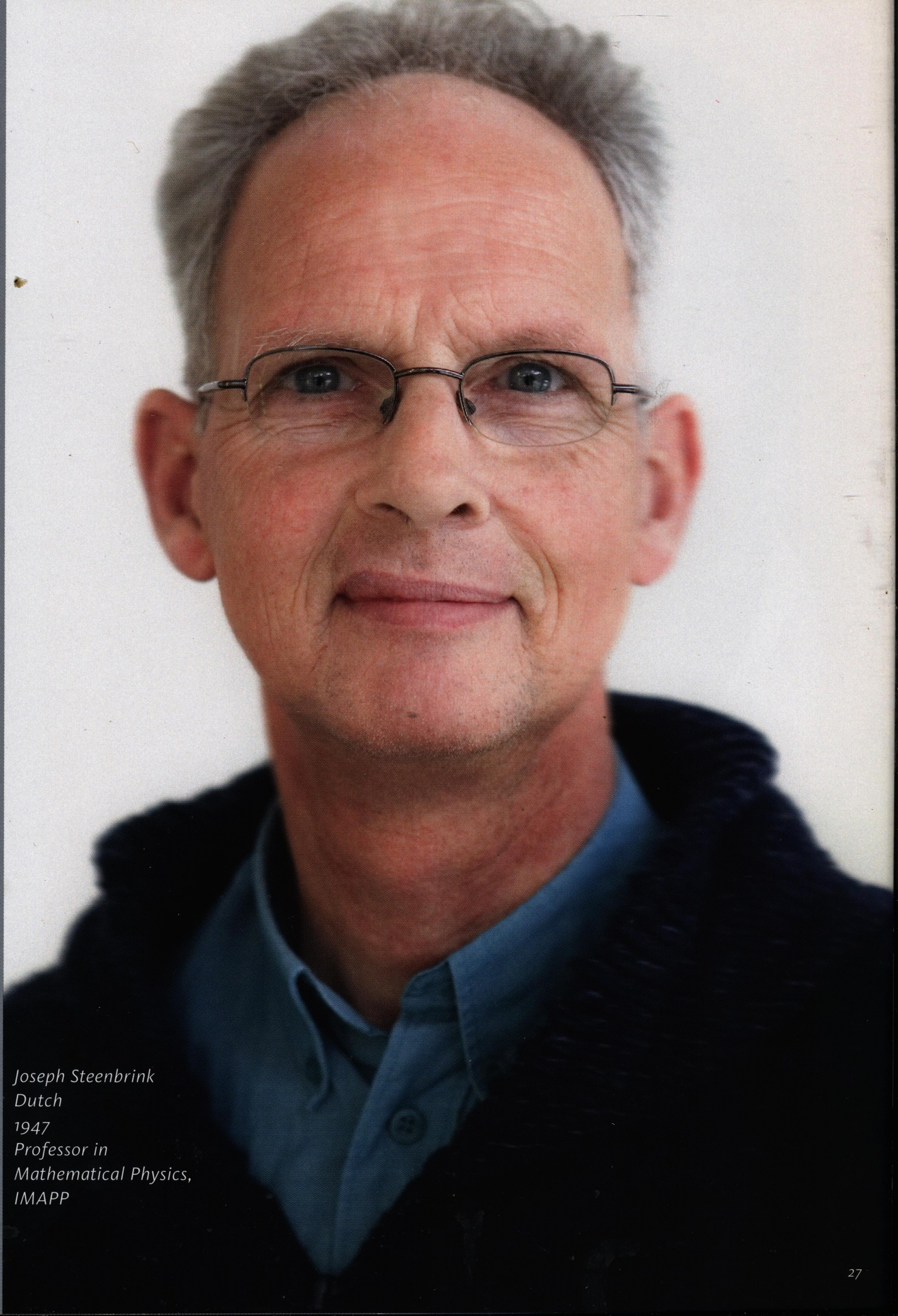
Name	*Wendy van Heesch*
Nationality	*Dutch*
Year of birth	*1982*
Works as	*manager in Facilities services*

Name	*Anup Jawalekar*
Nationality	*Indian*
Year of birth	*1973*
Works as	*a researcher in Organic Chemistry, IMM*

Name Fred Atoneche
Nationality Cameroonian
Year of birth 1974
Works as a researcher on photonic devices using atomic-optical nanofabrication, IMM



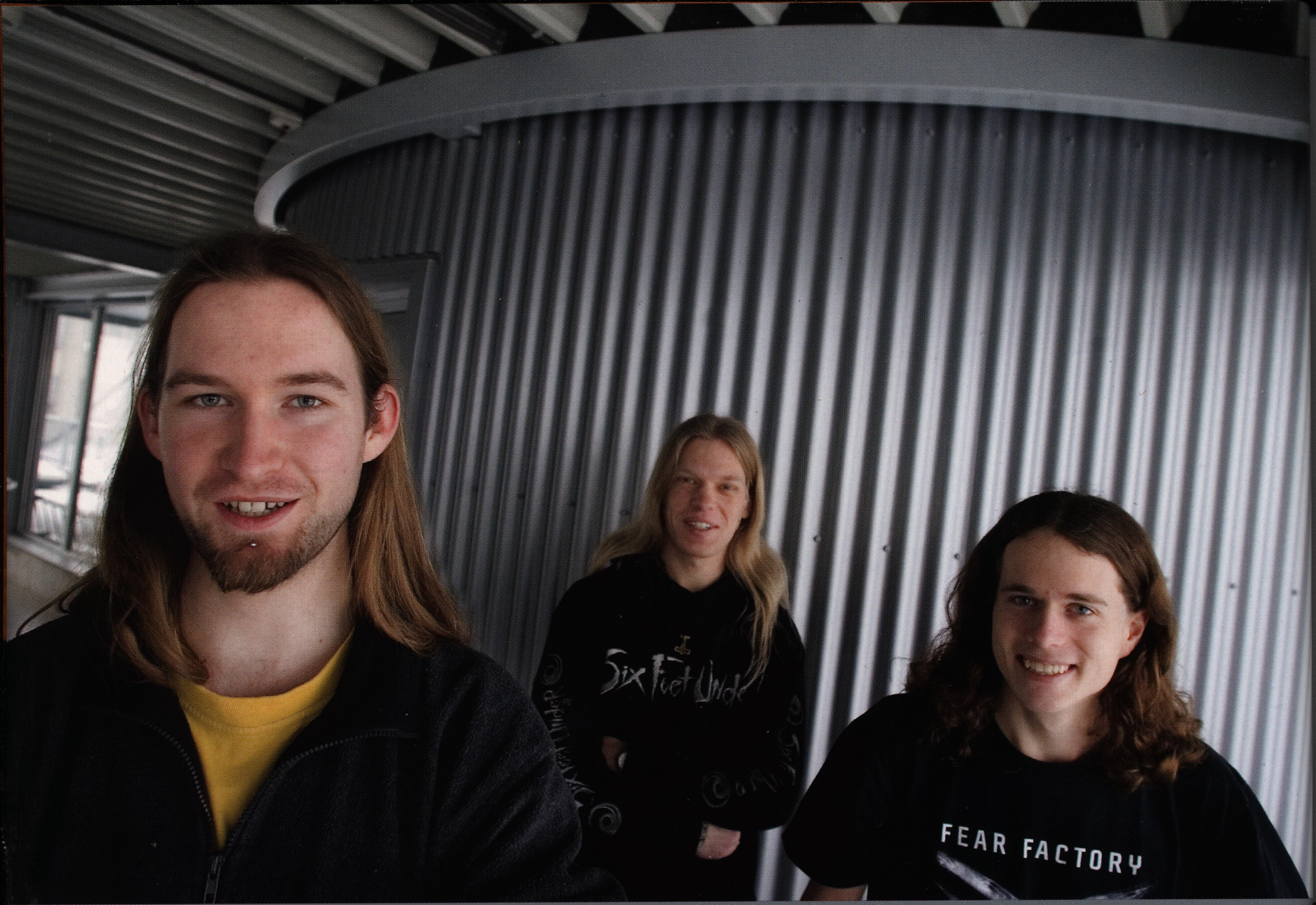
Name Ton Huijink
Nationality Dutch
Year of birth 1951
Works as Assistant director of the Faculty Library



Name	*Joseph Steenbrink*
Nationality	*Dutch*
Year of birth	*1947*
Works as	*Professor in Mathematical Physics, IMAPP*

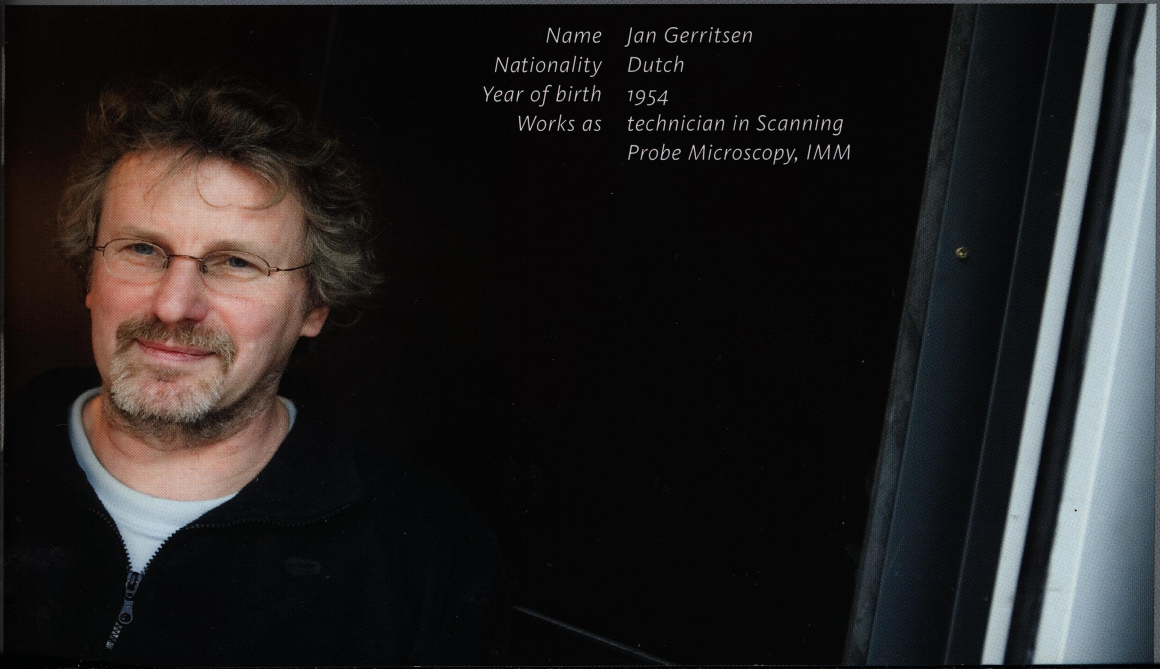
Name	*Cenet Karabina*
Nationality	*Turkish*
Year of birth	*1979*
Student of	*Chemistry*

Name Jan Arie Vonk
Nationality Dutch
Year of birth 1978
Works as a researcher on the Nitrogen dynamics of tropical sea-grasses, IWWR



Names	*Jonas Sweep (left), Karel Kok, Jord Boeijink (right)*
Nationality	*Dutch*
Year of birth	*1985, 1986, 1984*
Students of	*Physics and Astrophysics*

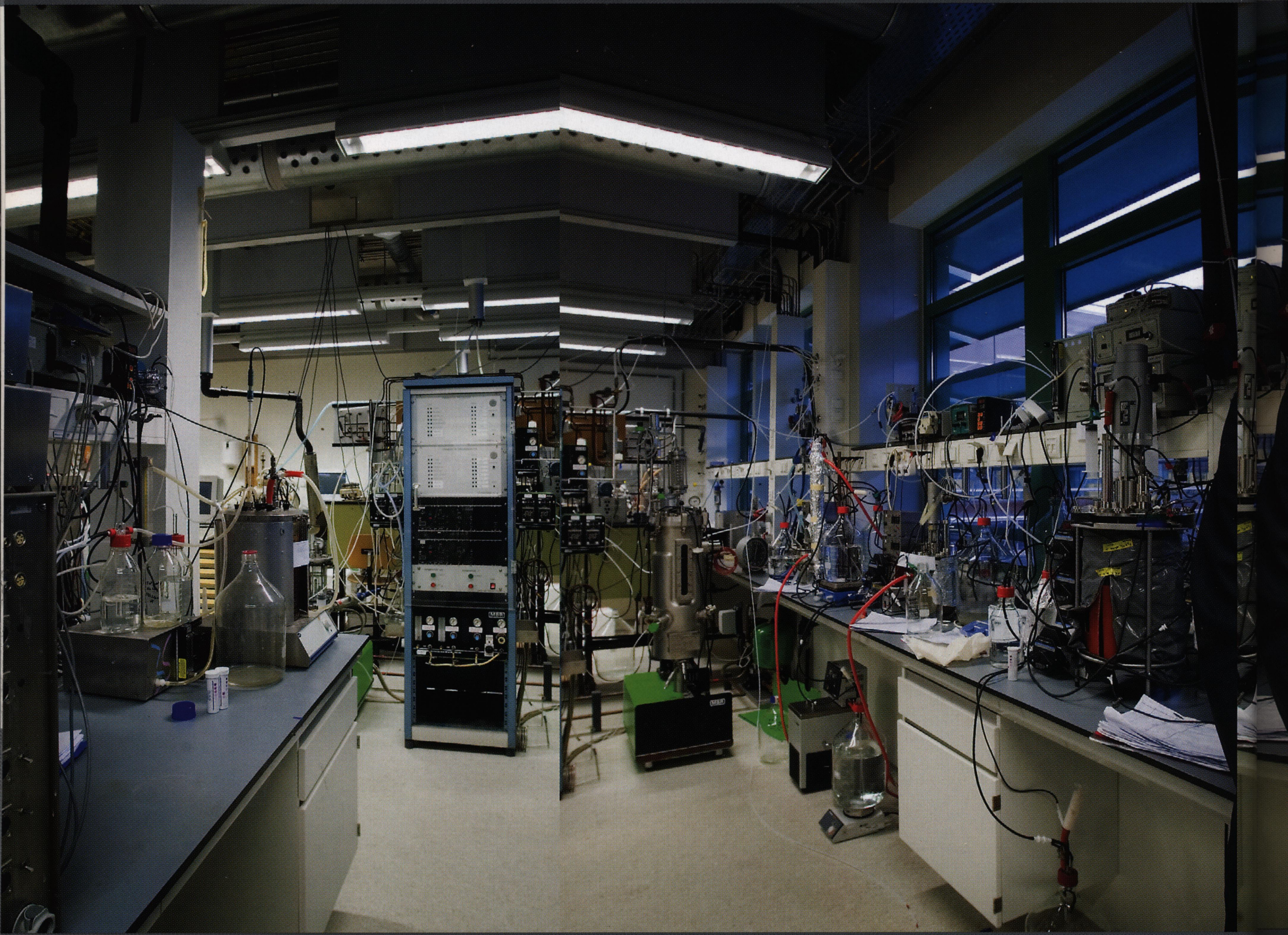
Names *Anna-Lisa Krieb, Anna-Lena Janssen, Rebecca Blom, Martha Wieczorek,*
Nationality *German*
Year of birth *1986, 1981, 1985, 1985*
Students of *Biology and Medical Biology*



Name *Jan Gerritsen*
Nationality *Dutch*
Year of birth *1954*
Works as *technician in Scanning Probe Microscopy, IMM*

Name	*Clara Salas*
Nationality	*Spanish*
Year of birth	*1985*
Student of	*Physics*

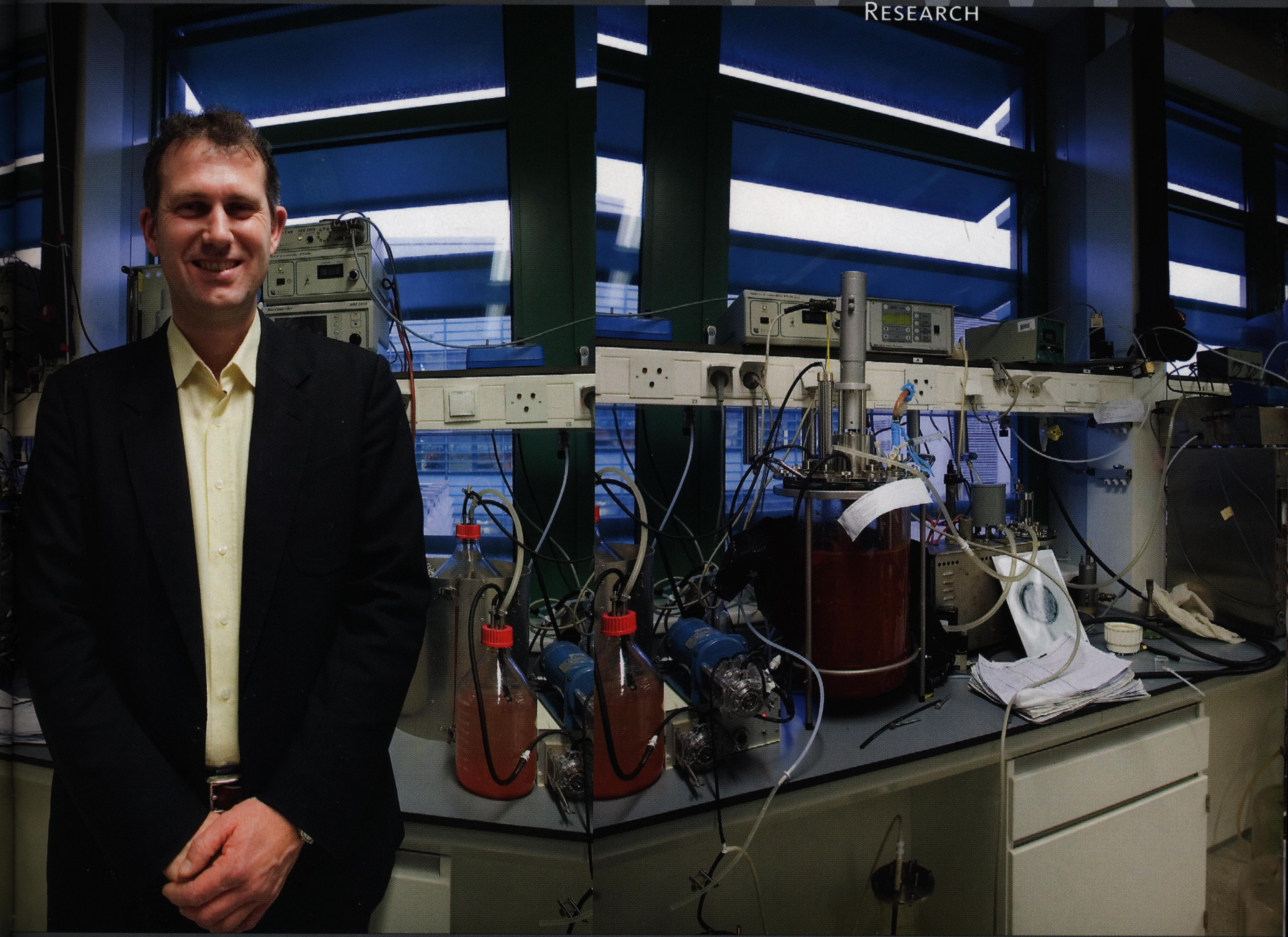
Name	*Lijnis Nelemans*
Nationality	*Dutch*
Year of birth	*1964*
Works as	*technician, IMM*



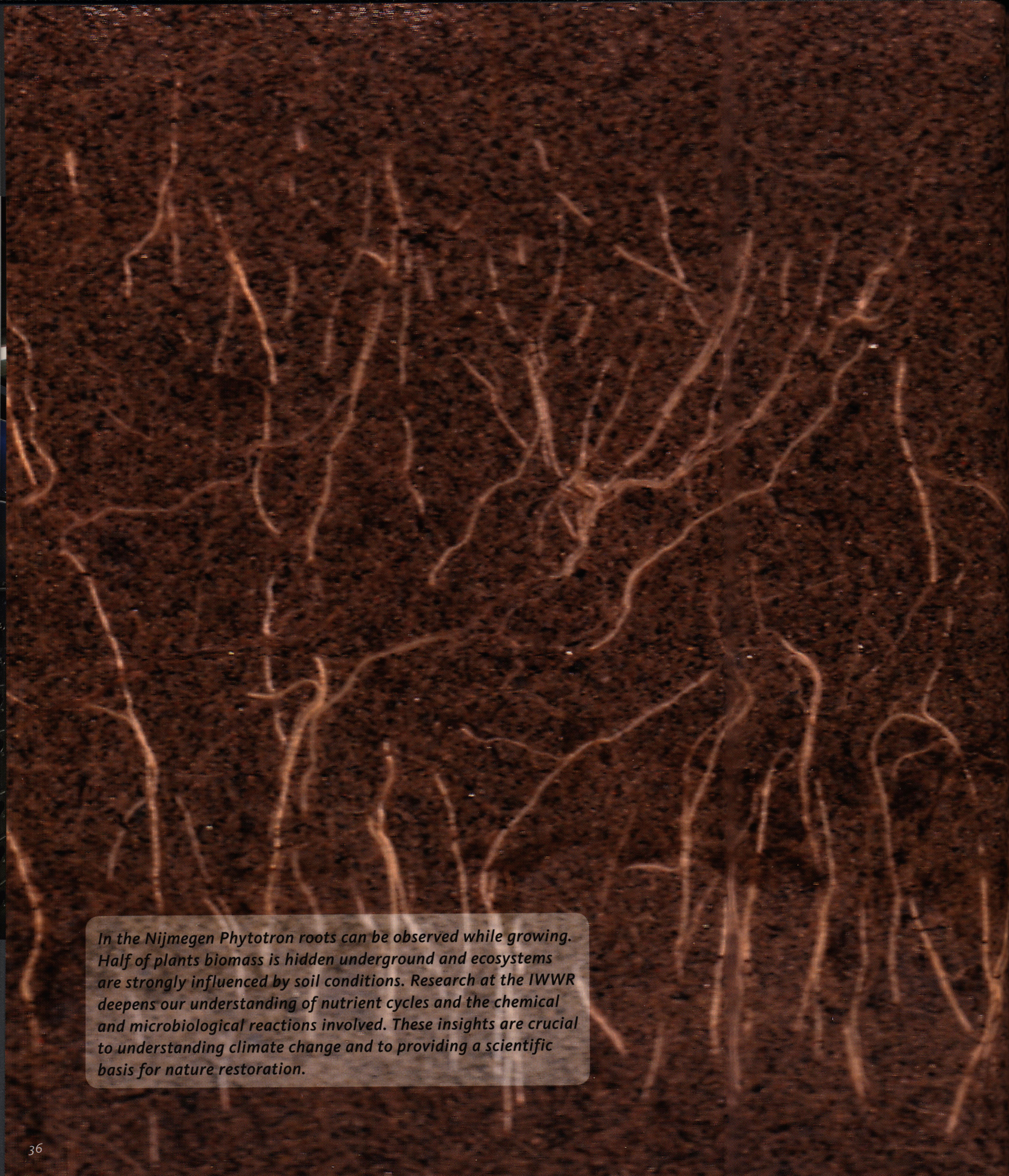
The Institute for Water and Wetland Research (IWWR) is an interdisciplinary cooperative venture between scientists engaged in microbiology, animal, plant and environmental sciences. Not only to enhance our understanding of interactions between plants, animals, and micro-organisms in the environment, but also to find solutions to a variety of environmental problems.

IWWR

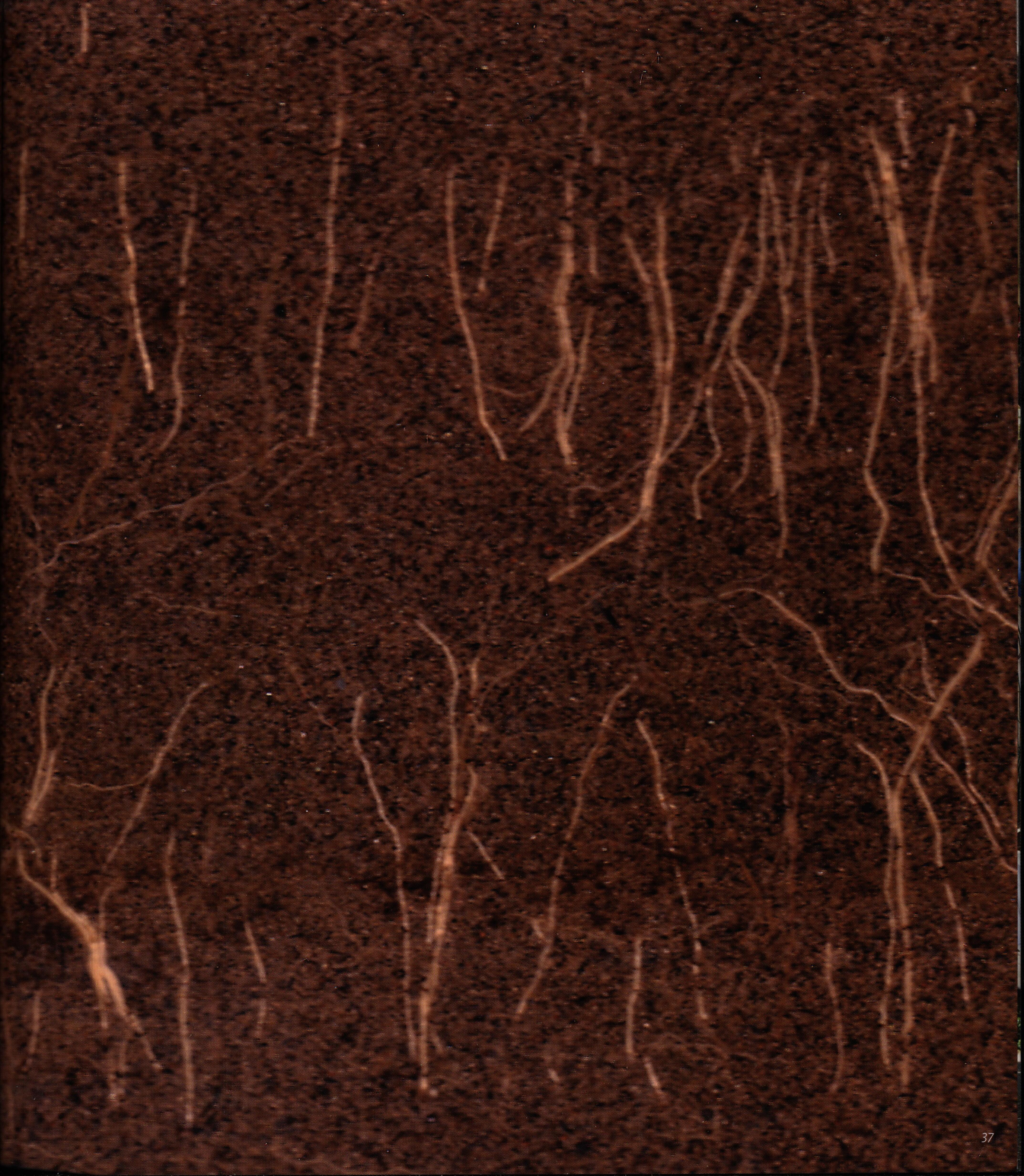
Research



Prof. Mike Jetten, IWWR Director



In the Nijmegen Phytotron roots can be observed while growing. Half of plants biomass is hidden underground and ecosystems are strongly influenced by soil conditions. Research at the IWWR deepens our understanding of nutrient cycles and the chemical and microbiological reactions involved. These insights are crucial to understanding climate change and to providing a scientific basis for nature restoration.

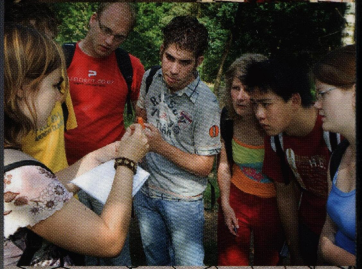


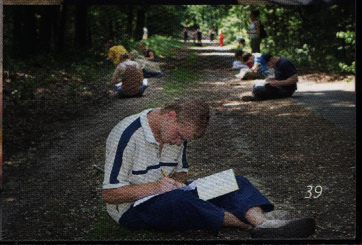
Institute of Biosciences

Education

Director: *Prof. Joop van Zoelen*
Bachelor's programme: *Biology*
Master's programmes: *Biology, Medical Biology and Environmental Sciences*
Topics: *Evolution and Adaptation, Cells & Energy, Genetic Structures & Heredity, Organisms & Environment, Physiology & Communication*

Research on living materials is currently attracting a great deal of interest, partly due to humanity's ongoing desire to understand how nature works, and partly because of our need to use this understanding for medical and environmental purposes. Major breakthroughs are now being achieved in deciphering the code of life and in the field of global change biology. Students in the Department receive a broad Bachelor programme in Biology has three tracks: general biology, medical biology and environmental sciences, that each leading to specialised Master's programmes. Students are trained by leading scientists, particularly in fresh water biology, neural biology, gene/environment interactions and molecular life sciences.





RESEARCH

Moving beyond today's constraints

It's not just expertise in all the major sciences – Physics, Astronomy, Chemistry, Biology, Mathematics and Informatics – that makes Nijmegen's Science Faculty so broad-based. It's also the fact that our research ranges from the extremely abstract and formal to the purely phenomenological, covering such a wide variety of topics and using so many methods and types of equipment. There's also the coherence in our way of thinking – a characteristic that binds staff members and facilitates interdisciplinary collaboration. And there's our strong focus on fundamental research.

As well as breadth there's also vigour, something which is epitomised by the dynamic form and striking wings of the Huygens building. For research is thriving here – a fact that's acknowledged not only by the academic community, but also by people in the business community and those who provide our funding.

In a book such as this, with glossy pages devoted to a gleaming new building, there's a great temptation to brag shamelessly about the value of the natural-science research conducted in Nijmegen. So let's be honest: it's a temptation we won't attempt to resist. We're proud of the current state of research in our Faculty and confident of our future prospects.

This is not just because of the recent rejuvenation of the professorial body, which has put a new spring into the step of the traditions we've established so successfully over the past fifty years. It's also because of the value of our many initiatives, and particularly because of certain key individuals and discoveries that have made Nijmegen celebrated among academics around the world. Here are some of the areas in which our scientists have made a difference:

- Professors Aloysio Janner and Ted Janssen, who together developed the theory of incommensurate crystals, won the prestigious Gregori Aminoff Crystallography Prize in 1998 "for their contribution to the theory and practice of modulated structure refinements."
- Professor Kees Hilbers' innovations in the field of NMR technologies and his pioneering work in applying these techniques in physical and biophysical chemistry.
- Professor Herman van Kempen's important early work with Scanning Probe and Atomic Force Microscopes
- Professor Victor Westhoff was a leading post-war environmentalist and a founder of ecology. In Nijmegen this discipline has grown from plant sociology into a detailed study of interacting soil processes which is laying the foundations for a new scientific field: biogeochemistry.

Alongside these distinguished Emeritus professors, we would also like to mention a number of today's leading academics and some of their successes:

- Professor Henk Barendregt, winner of the Spinoza Award for his extraordinary achievements in Mathematics, Logic and Informatics. Barendregt is using some of these research funds to study the link between the brain and consciousness.
- Our strong international position in supramolecular chemistry under the leadership of Professor Roeland Nolte, a distinguished member of the Royal Netherlands Academy of Arts and Sciences. Many discoveries in his department have come to characterise the development of new materials and methods of synthesis.
- The discovery of the role of microbes in the earth's chemical cycles – notably the *anammox* bacterium – has led to numerous high-impact publications from Professor Mike Jetten's group in recent years.

- Based on his critical assessment of the reliability of electoral databases and voting machines, Professor Bart Jacobs was recently appointed adviser to the ministerial committee that is reviewing the electoral process in the Netherlands.
- Armed with a Vici scholarship, young researchers can further develop promising ideas. A few examples: Prof. Alan Rowan is working on information exchange in catalysis; Dr. Geerten Vuister is exploring the physical chemistry of calcium channels; Prof. John van Opstal is unravelling the neural code associated with the perception of sound; and Dr. Tom Heskes is working on Artificial Intelligence.
- Professor Klaas Landsman, mathematician and winner of the PIONIER Award in Amsterdam, decided to continue his work in Nijmegen. He is researching singularities in physics – exotic phenomena which current scientific laws are unable to explain satisfactorily.
- Members of the Royal Netherlands Academy of Arts and Sciences not mentioned above are Prof . Ad van der Avoird, Theoretical Chemistry; Prof. Kees Blom, Experimental Plant Ecology; Prof. Titi Mariani, Plant Studies; and Prof. Sjoerd Wendelaar Bonga, Animal Ecology and Ecophysiology. Prof. Jan van Hest, Bio-organic Chemistry, and Dr. Marc Strous, Microbial Ecology, are members of the Young Academy.

Intriguing machines

We are also noted for developing methods that give researchers a head start. Some striking examples of these can be found behind the Huygens building in the Institute for Molecules and Materials. Housed within the lotus-shaped Samuel Goudsmit Pavilion that rises from the centre of a pool is much of the Nuclear Magnetic Resonance equipment used by our biophysicists and solid-matter chemists. Shaped like a classic horse-shoe magnet, there's also the world-famous High Field Magnet Laboratory, which creates extremely powerful magnetic fields.

And, hidden from view, there's the new underground NanoLab, which was built to extend Nijmegen's leading position in Nanoscience and Scanning Probe Microscopy.

The presence of many of these unique facilities reflects our vision that the most advanced spectroscopic instruments are needed to make scientific breakthroughs. It's precisely because of our vision and experience with such cutting-edge facilities that, in 2006, the Dutch government awarded us an unprecedented grant worth 27 million euro to extend our research infrastructure with a Free Electron Laser and a record-breaking 45-tesla magnet. So, as we celebrate the opening of the Huygens building, construction work continues unabated on the faculty site.

Less visible in Nijmegen, but no less relevant, is the participation of our astrophysicists and high-energy physicists in experiments that use specialised equipment to observe ever smaller and ever more remote objects. Staff at the Institute for Mathematics, Astrophysics and Particle Physics are involved in a wide range of vital work: at the Pierre Auger Observatory in Argentina, at Fermilab near Chicago, on the Lofar radio telescope project at Dwingeloo in the Netherlands, and on the Atlas experiment in the new CERN

particle accelerator in Geneva. And, should the Higgs-Boson particle be found, some of the credit that will be due to thousands of physicists worldwide will go to people working in Nijmegen.

The Nijmegen Phytotron, which recently came on stream, is truly innovative, making it possible to observe and research the underground life of plants. This lab grows plants under normal outdoor conditions, simultaneously scanning their roots and observing the chemical and biological conditions in the soil – an experimental approach that complements fieldwork by our ecological scientists and environmental specialists.

All departments are supported by a well-equipped pool of instruments – including advanced microscopes and analytical apparatus – as well as technicians whose expertise has contributed to numerous scientific breakthroughs.

Close collaboration

By creating clusters of thematic research, the University has long encouraged interdisciplinary work. This focus is not restricted to topics within the faculty. Thus, our cell biologists also work at the Nijmegen Centre for Molecular Life Sciences, our physicists assist specialists at the FC Donders Centre for Cognitive Neuroimaging in improving brain scanning methods, and our biophysicists and neurophysiologists have close links with the Institute for Neuroscience.

Collaboration is not just a local affair. It's not even a national one. In more ways than we have space to mention here, research at Nijmegen is linked to work being done by others around the world. The Huygens building is home to researchers with some fifty nationalities and has formal and informal ties in a similar number of countries.

Little wonder that we believe the research we do here makes this building such a powerful node in the network of global science.

Name: *Jan Kuijpers*
Nationality: *Dutch*
Year of birth: *1946*
Works as: *Dean, Faculty of Science*
Professor in Astrophysics

Norway Swede Fi

Canada

Den rk

United States

Germany

Belgium

Ireland

Luxembourg

United Kingdom

France

Portugal

Austria

Switzerland

Spain

Mexico

Italy

Colombia

Morocco

Guyana

Suriname

Gambia

Côte d'Ivoir

Cameroon

Brazil

The Ne

Argentina

Faculty of Science Huy Bu

Radboud U ity

Finland

Lithuwania

Russian Federation

China

Korea

Japan

Ukraine

Taiwan

Poland

Chech Republic

Hungary

Romania

Croatia

Bulgaria

Viet Nam

Yugoslavia

Serbia-Montenegro

Greece

Turkey

Israel

Iraq

Iran

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India

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Uganda

Indonesia

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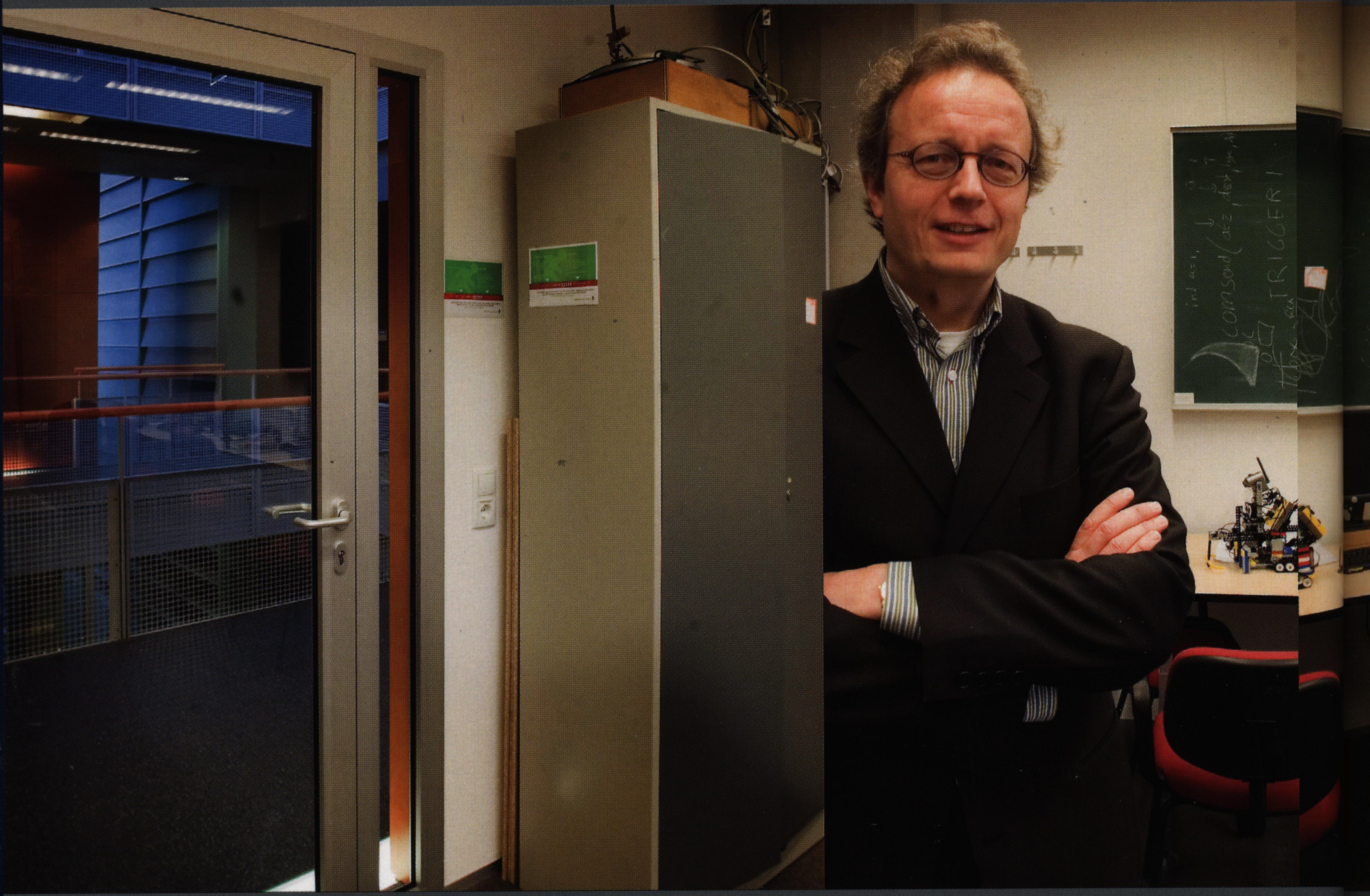
Building Toernooiveld 1
sity Nijmegen

South Africa

Australia



Prof. Bart Jacobs, ICIS Director

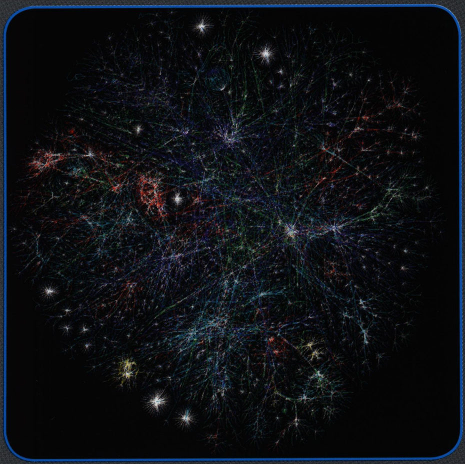
ICIS

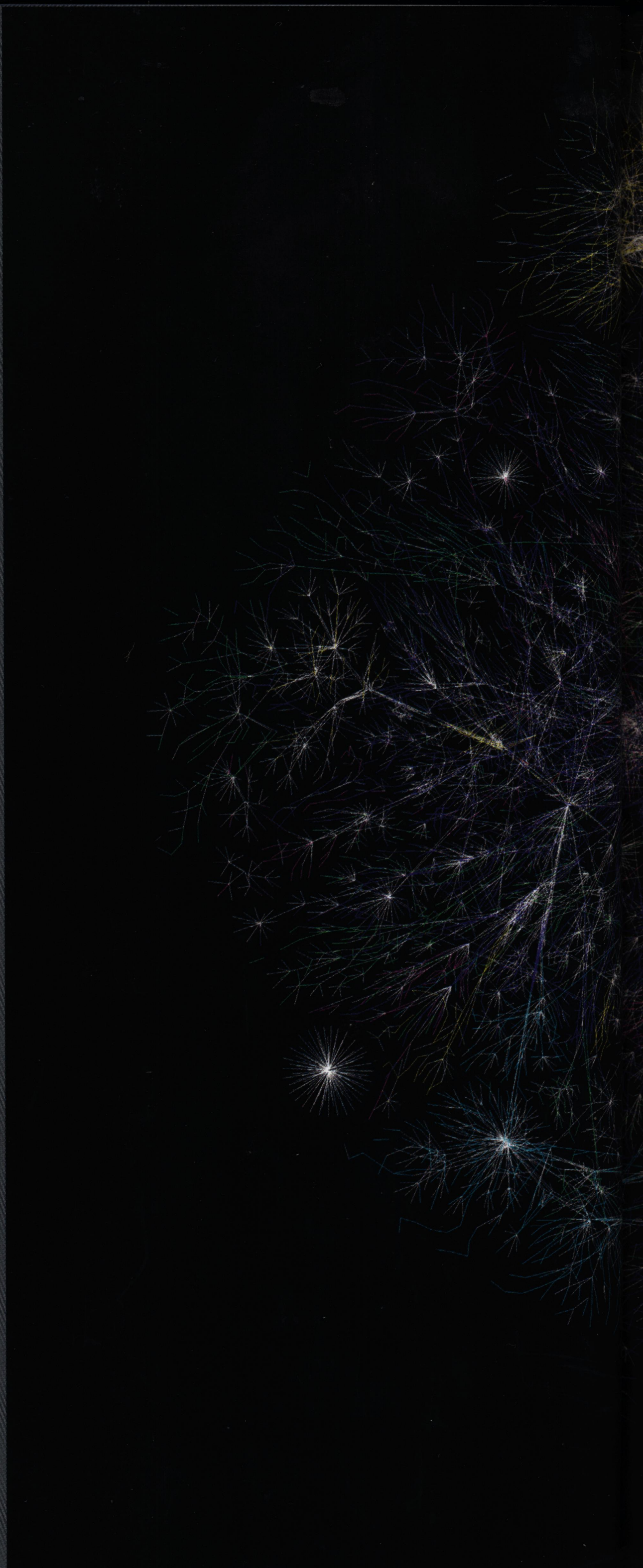
Research

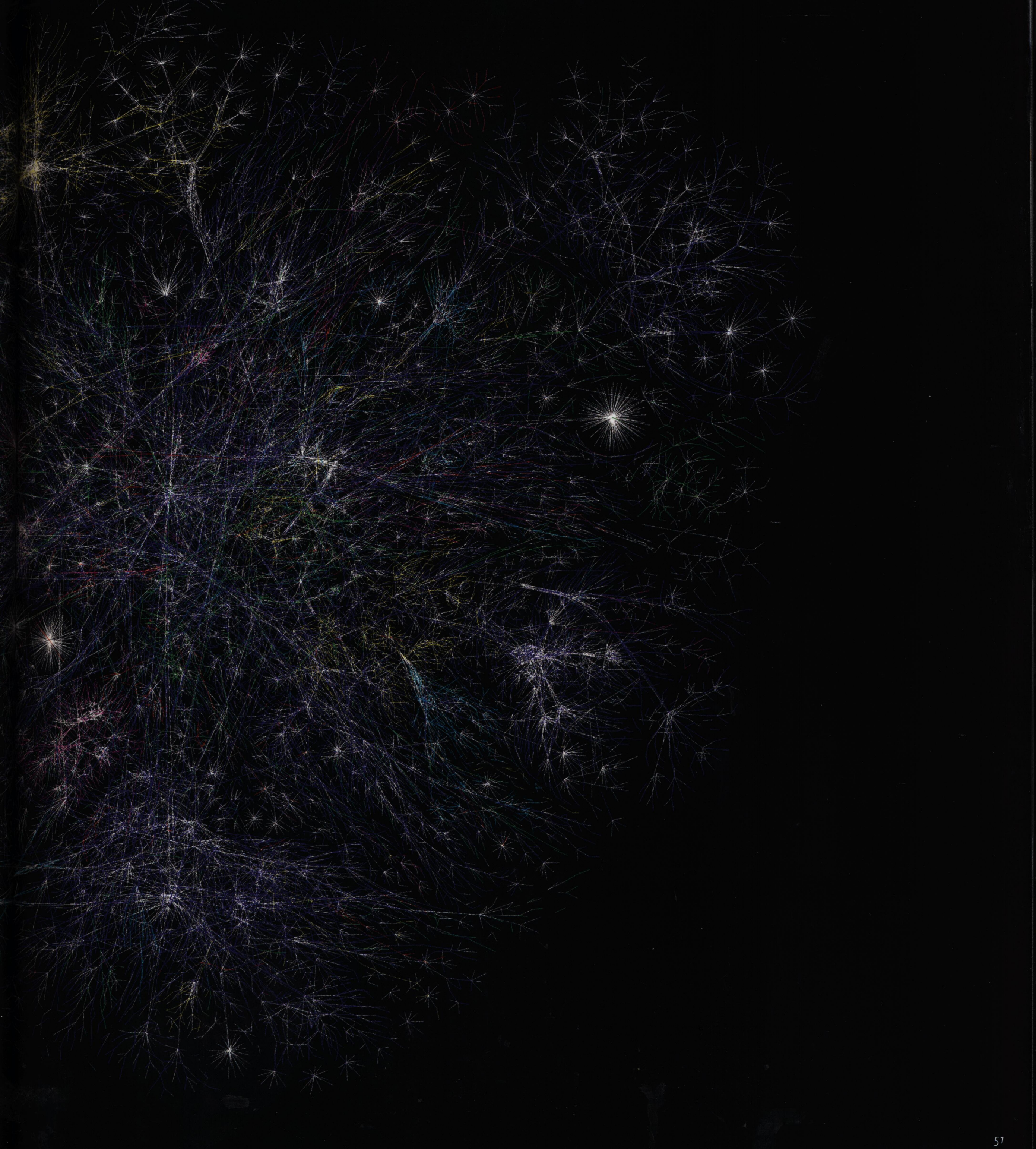
The mission of the Institute of Computing and Information Studies (ICIS) is to develop formal, mathematical theories, methods and tools to support the specification, design, analysis and evaluation of computerbased systems, starting with identifying and formalizing requirements.

Impression of the activity on the Internet

As more and more people get connected to the Internet, security, privacy, usability and reliability issues become increasingly important.
ICIS has developed algorithms for proving that software works as intended and is designing methods for automating this process.
In January 2006 the Biophysics group joined the institute. Their expertise on neural networks and mind-machine interactions is a welcome addition to the research programme.





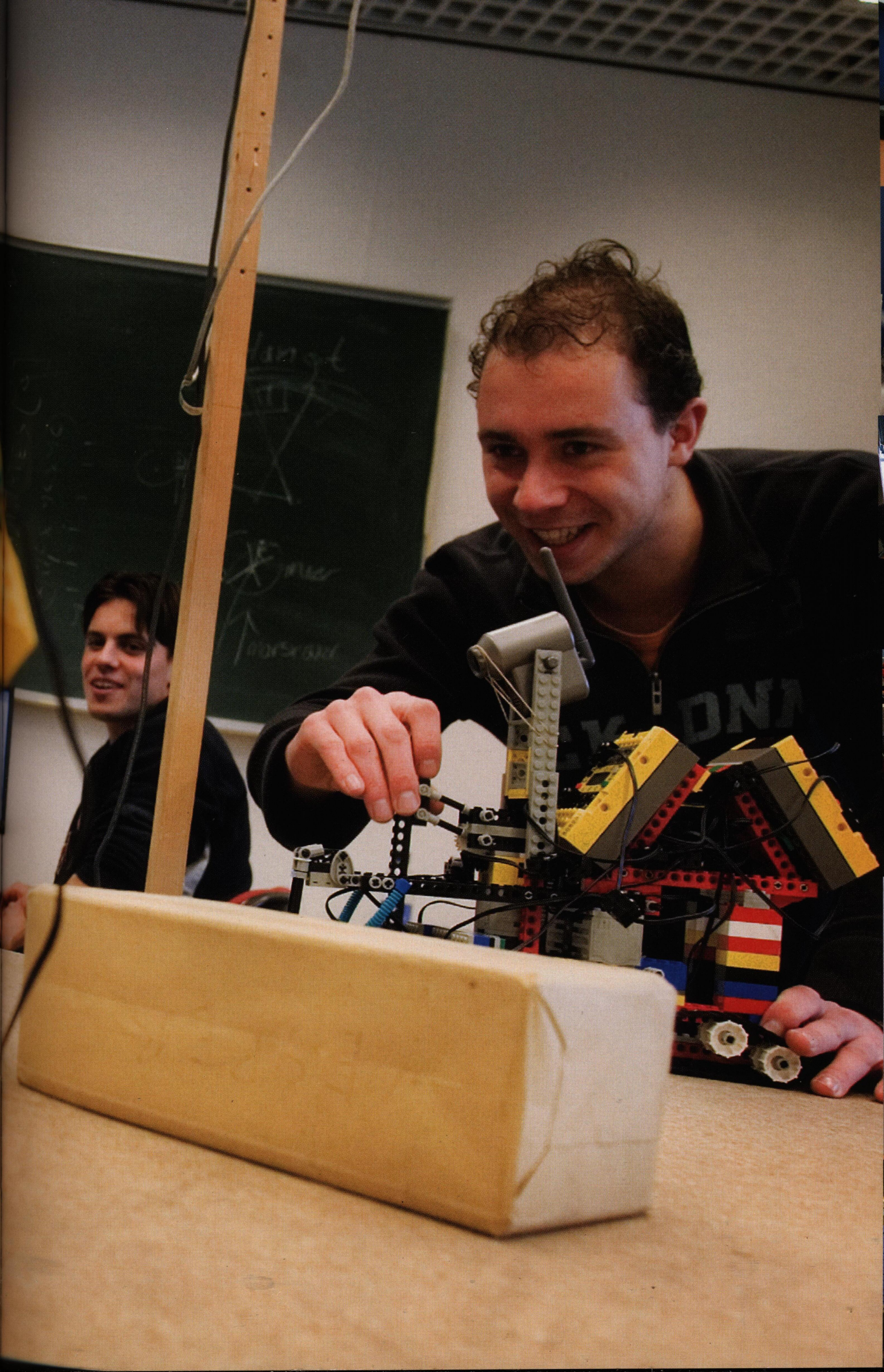


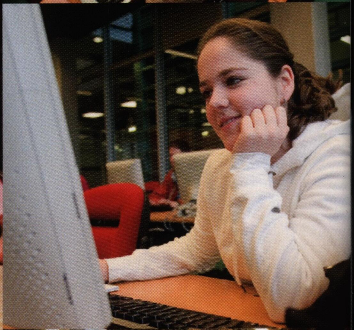
Institute of Informatics and Computer Science

EDUCATION

Director: *Dr. Erik Barendsen*
Bachelor's programmes: *Computing Science, Information Science*
Master's programmes: *Computing Science, Information Science*
Topics: *Computer Security, Artificial Intelligence, Embedded Systems, Foundations, Software Technology, Information Systems, and ICT in relation to people and organizations (Digital Architecture).*

The teaching programmes in Computing Science and Information Science relate to Information and Communication Technology (ICT), each from its own perspective. Computer scientists focus on the design and reliability of software and technology that is firmly rooted in and derived from first mathematical principles (How can we secure the data on a chip card? How can we guarantee the fail-safety of software in an aircraft?). Specialists in Information Science are concerned with tailoring ICT to the requirements of complex, dynamic environments and this requires close cooperation with researchers in the social and management sciences (How can we redesign the information management systems in a hospital? How can we organise elections via Internet?).





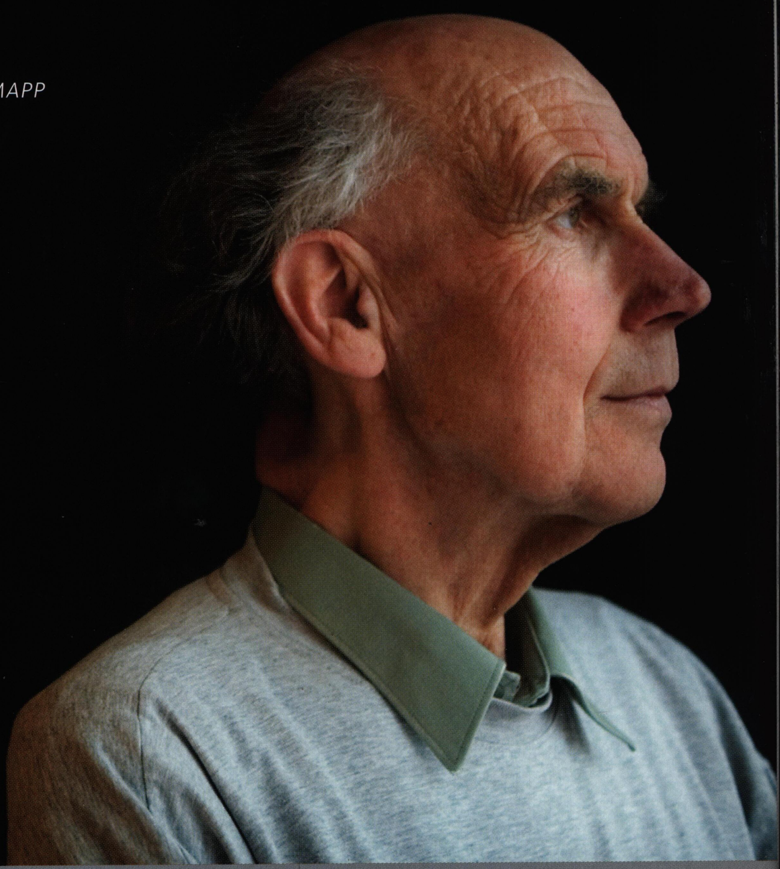
Name	*Agnieszka Hunka*
Nationality	*Polish*
Year of birth	*1978*
Works as	*a researcher on River management, ISIS*

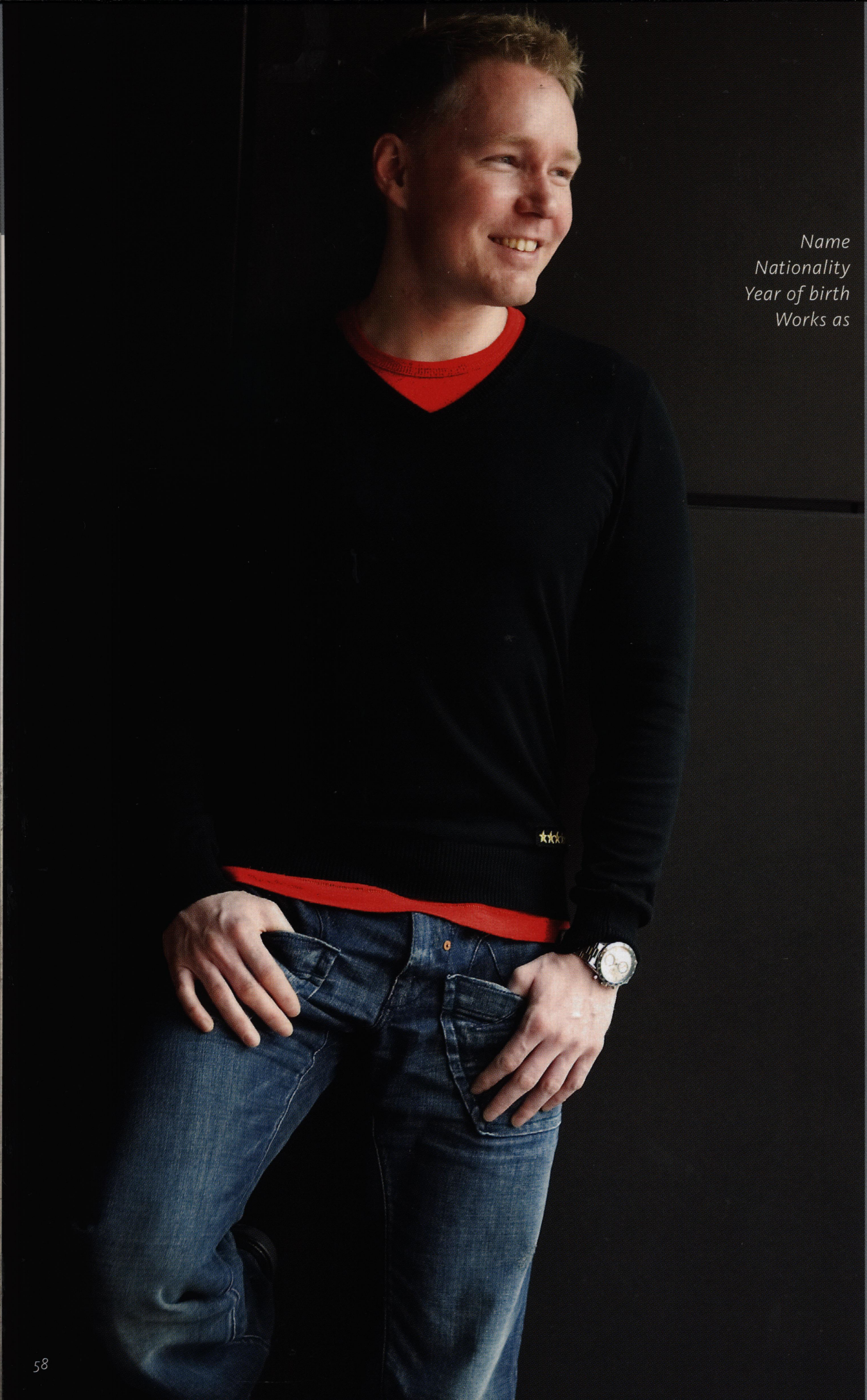
Name Daisy Maurits
Nationality Dutch
Year of birth 1958
Works as Secretary, IWWR

Name Simona Cristescu
Nationality Romanian and Dutch
Year of birth 1968
Works as a researcher on the Development and application of trace gas detectors in the Life sciences, IMM

Name *Anneke Rijpkema*
Nationality *Dutch*
Year of birth *1979*
Works as *a researcher on the Evolution of floral development, IWWR*

Name *Ulrich Schwarz*
Nationality *Swiss*
Year of birth *1932*
Works as *a researcher on High-velocity clouds, IMAPP*





Name	*Kasper Nørgaard*
Nationality	*Danish*
Year of birth	*1974*
Works as	*a researcher on Molecular Materials, IMM*

Name	*Annalisa Fasolino*
Nationality	*Italian/Dutch*
Year of birth	*1954*
Works as	*Professor in Theory of condensed matter, IMM*

Name Niall Deacon
Nationality British
Year of birth 1982
Works as a researcher on Proper motion surveys for low-mass stars and white dwarfs, IMAPP

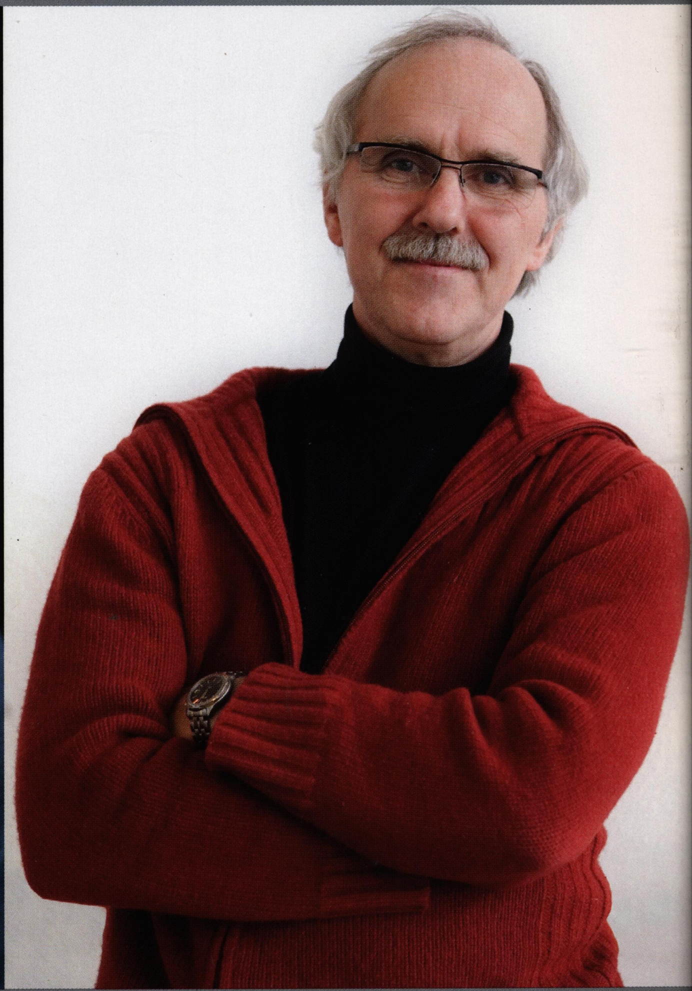
Name Heather Kitto
Nationality New Zealander
Year of birth 1978
Works as a researcher on Polyisocyanides, IMM

Name Cyrille Monnereau
Nationality French
Year of birth 1979
Works as a researcher on Catalytic Rotaxanes, IMM

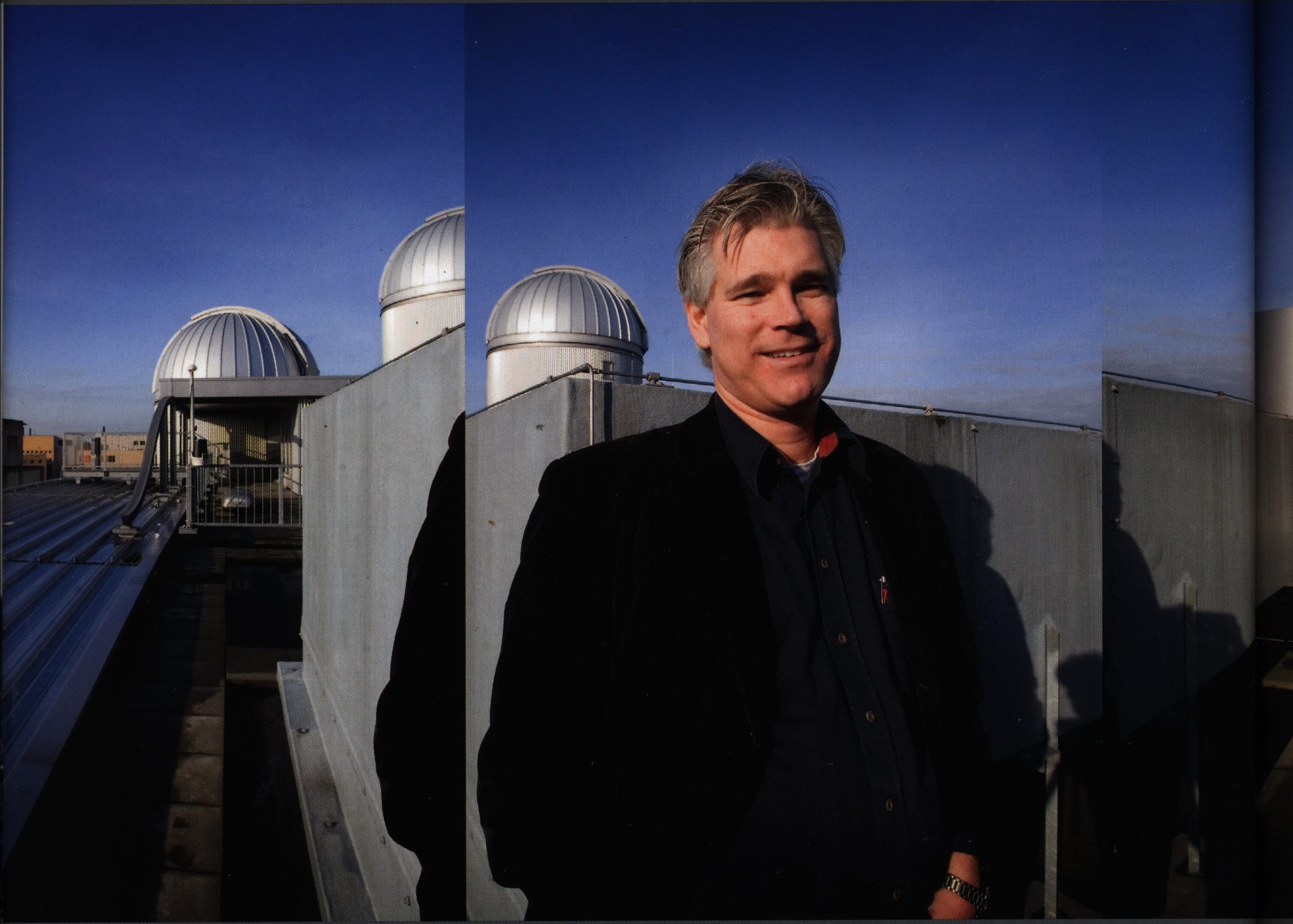
Name *Marko van Eekelen*
Nationality *Dutch*
Year of birth *1956*
Works as *Associate Professor in Security and Program Correctness, ICIS*

Name *Miyuki Kuribara*
Nationality *Dutch (originally Japanese)*
Year of birth *1981*
Works as *a researcher on the short and long-term effects of the brain-derived neurotrophic factor in Xenopus laevis melanotrope cells, IWWR*

Name Jelle Eygensteyn
Nationality Dutch
Year of birth 1949
Works as as a multilabel counter technician in Element & sequence analysis, IWWR

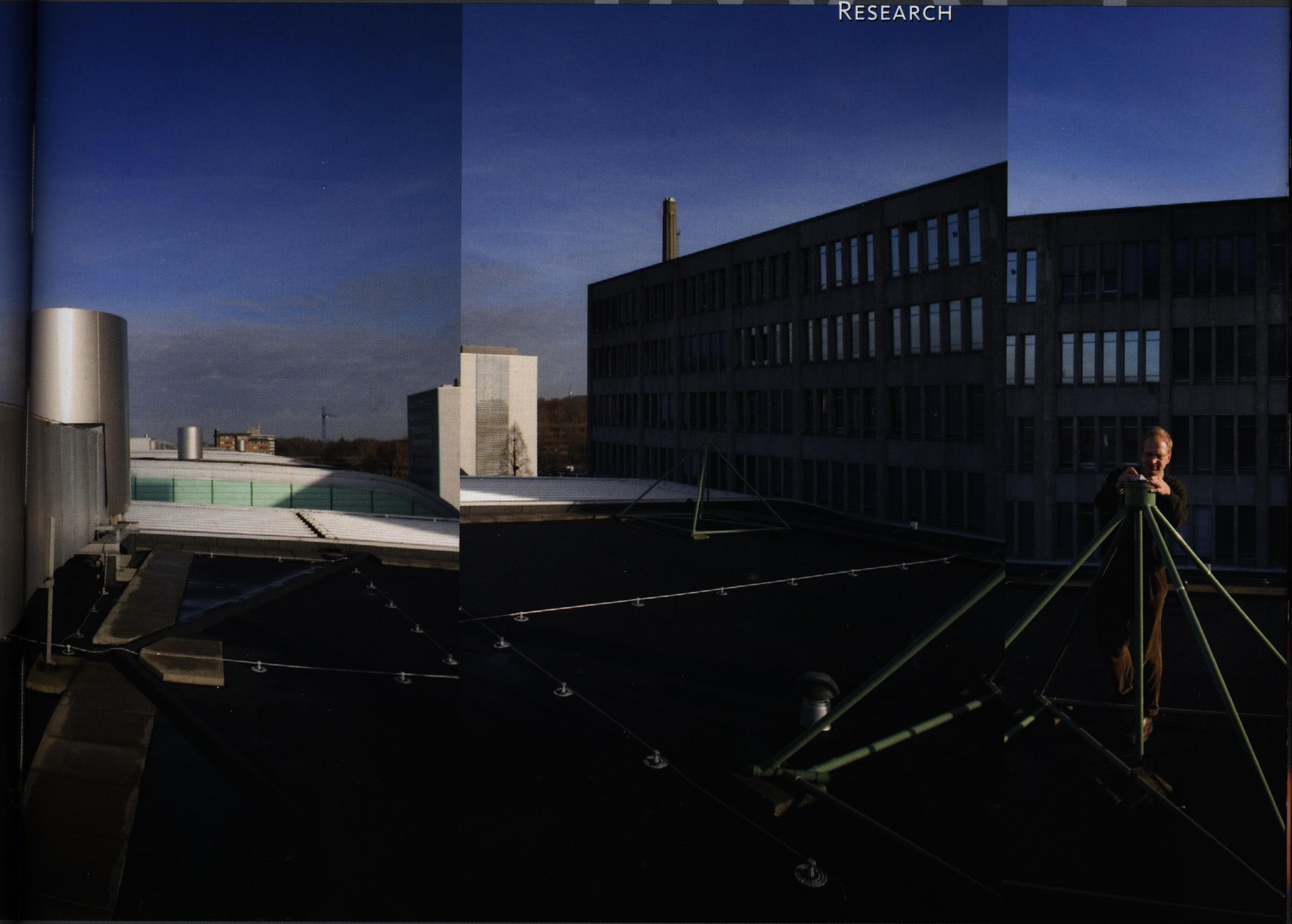


Name Rasa Jurgelenaite
Nationality Lithuanian
Year of birth 1979
Works as a researcher on Bayesian Networks, ICIS

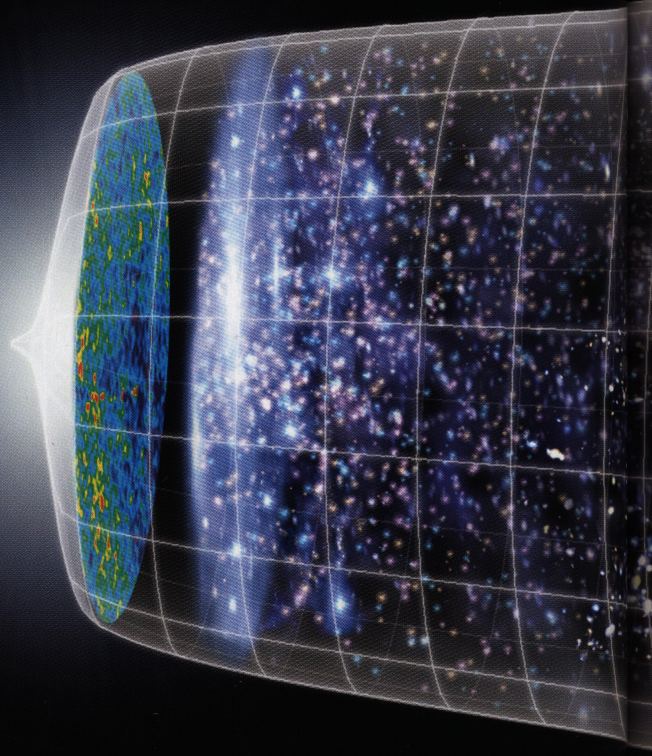


Prof. Sybrand de Jong, *IMAPP Director*

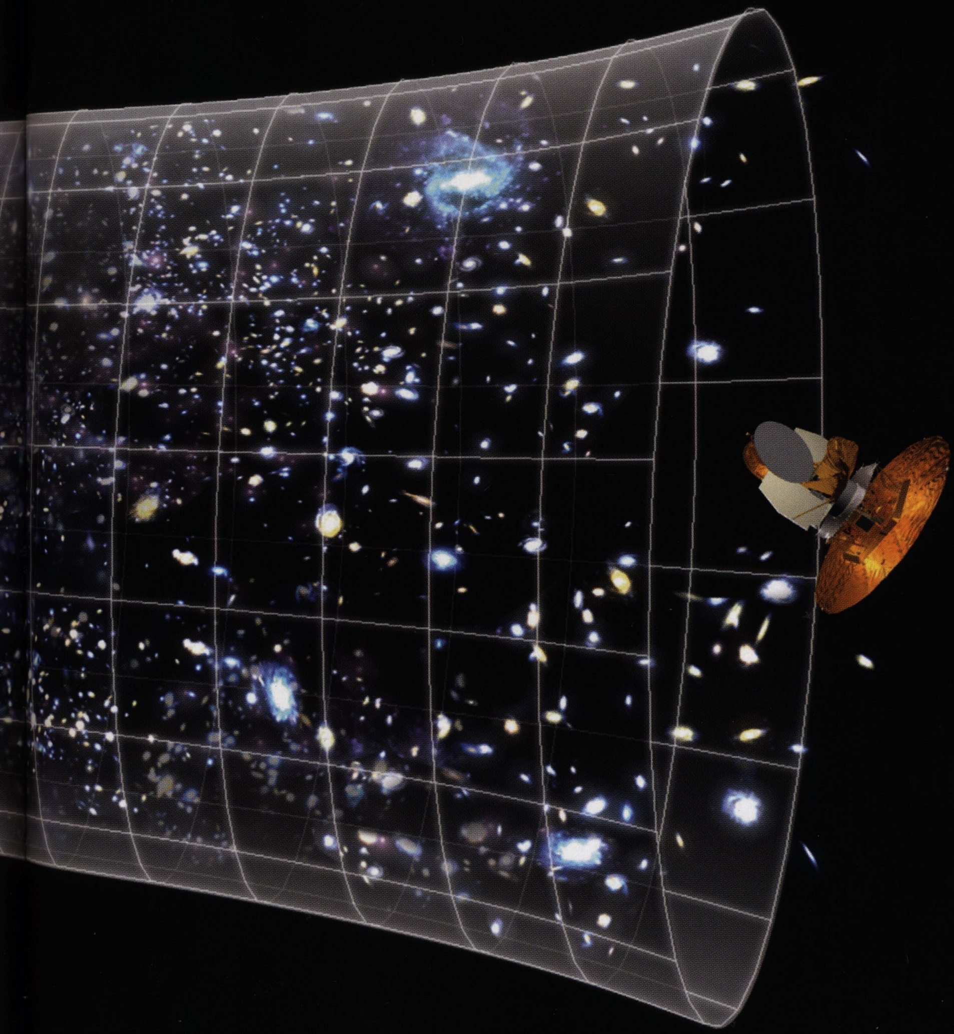
IMAPP



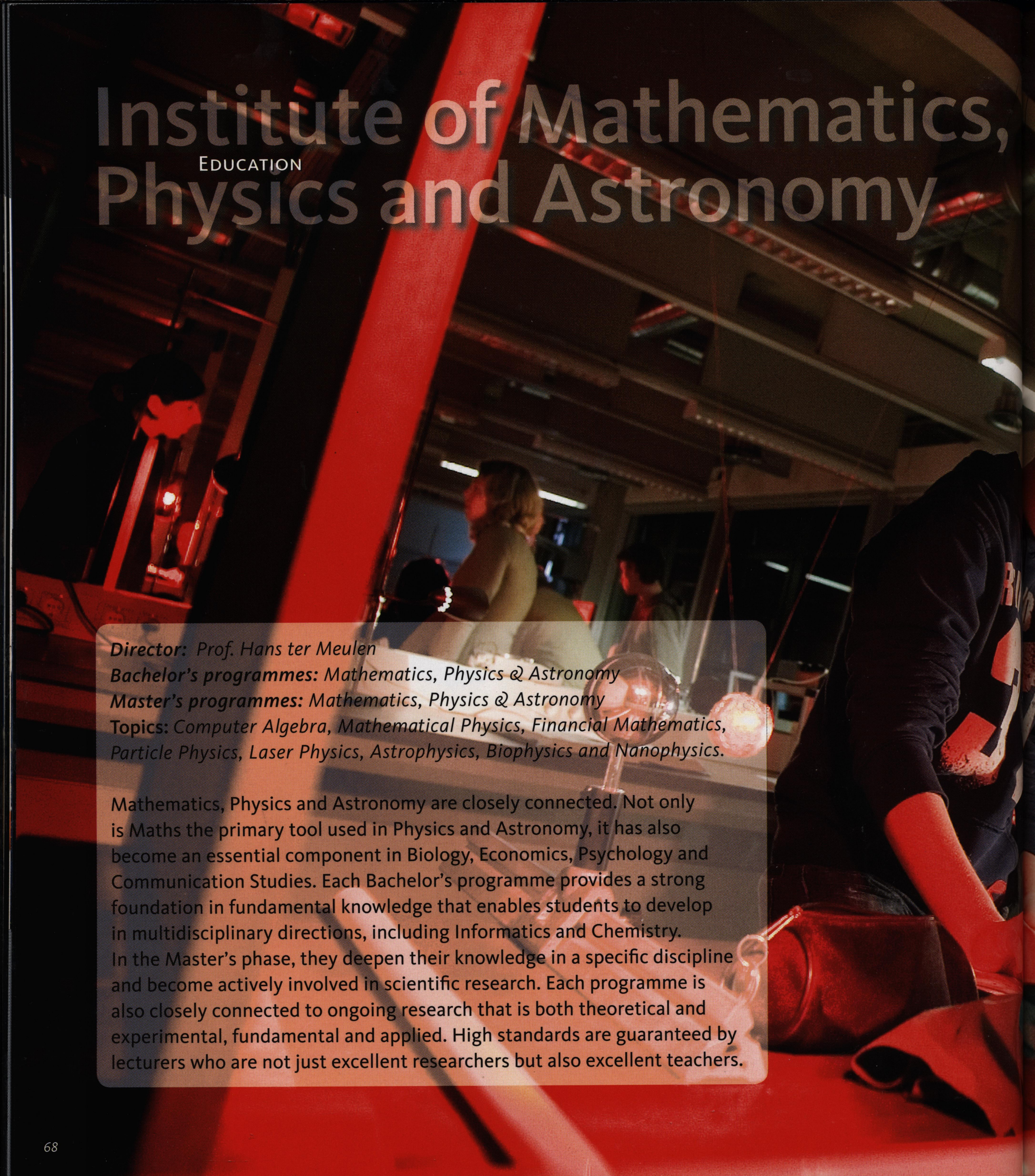
The Institute for Mathematics, Astrophysics and Particle Physics (IMAPP) conducts research on the universe, the nature of matter and formal mathematics. This research, which is by nature fundamental, focuses on, among other topics, the study of the origins of the universe.



The expansion of the universe since the Big Bang, in which the cosmos emerges according to laws of physics that are only comprehensible through the language of mathematics. To understand the inception and evolution of the universe - surely the greatest conceivable challenge - this is the underlying aim and inspiration for IMAPP's fundamental research.

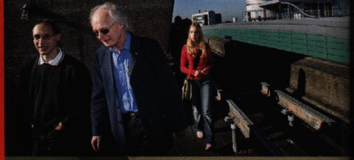


Institute of Mathematics, Physics and Astronomy



Director: *Prof. Hans ter Meulen*
Bachelor's programmes: *Mathematics, Physics & Astronomy*
Master's programmes: *Mathematics, Physics & Astronomy*
Topics: *Computer Algebra, Mathematical Physics, Financial Mathematics, Particle Physics, Laser Physics, Astrophysics, Biophysics and Nanophysics.*

Mathematics, Physics and Astronomy are closely connected. Not only is Maths the primary tool used in Physics and Astronomy, it has also become an essential component in Biology, Economics, Psychology and Communication Studies. Each Bachelor's programme provides a strong foundation in fundamental knowledge that enables students to develop in multidisciplinary directions, including Informatics and Chemistry.
In the Master's phase, they deepen their knowledge in a specific discipline and become actively involved in scientific research. Each programme is also closely connected to ongoing research that is both theoretical and experimental, fundamental and applied. High standards are guaranteed by lecturers who are not just excellent researchers but also excellent teachers.



Prof. Hub Zwart, ISIS Director

ISIS

Research and Education

The Institute for Science, Innovation and Society (ISIS) brings together a group of experts from a variety of disciplines and backgrounds (natural sciences, social sciences and philosophy of science). The emergence of new technologies such as ICT, genomics and nanotechnology affect the way we see ourselves in relation to the world around us. The mission of ISIS is to understand, assess and improve the interaction between science, technology and society.

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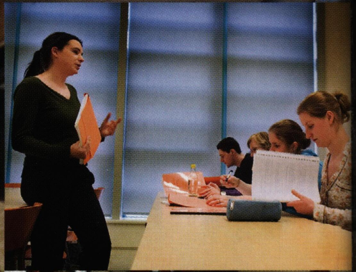

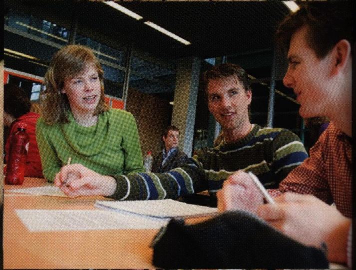

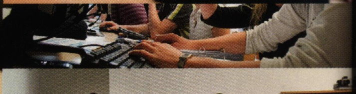

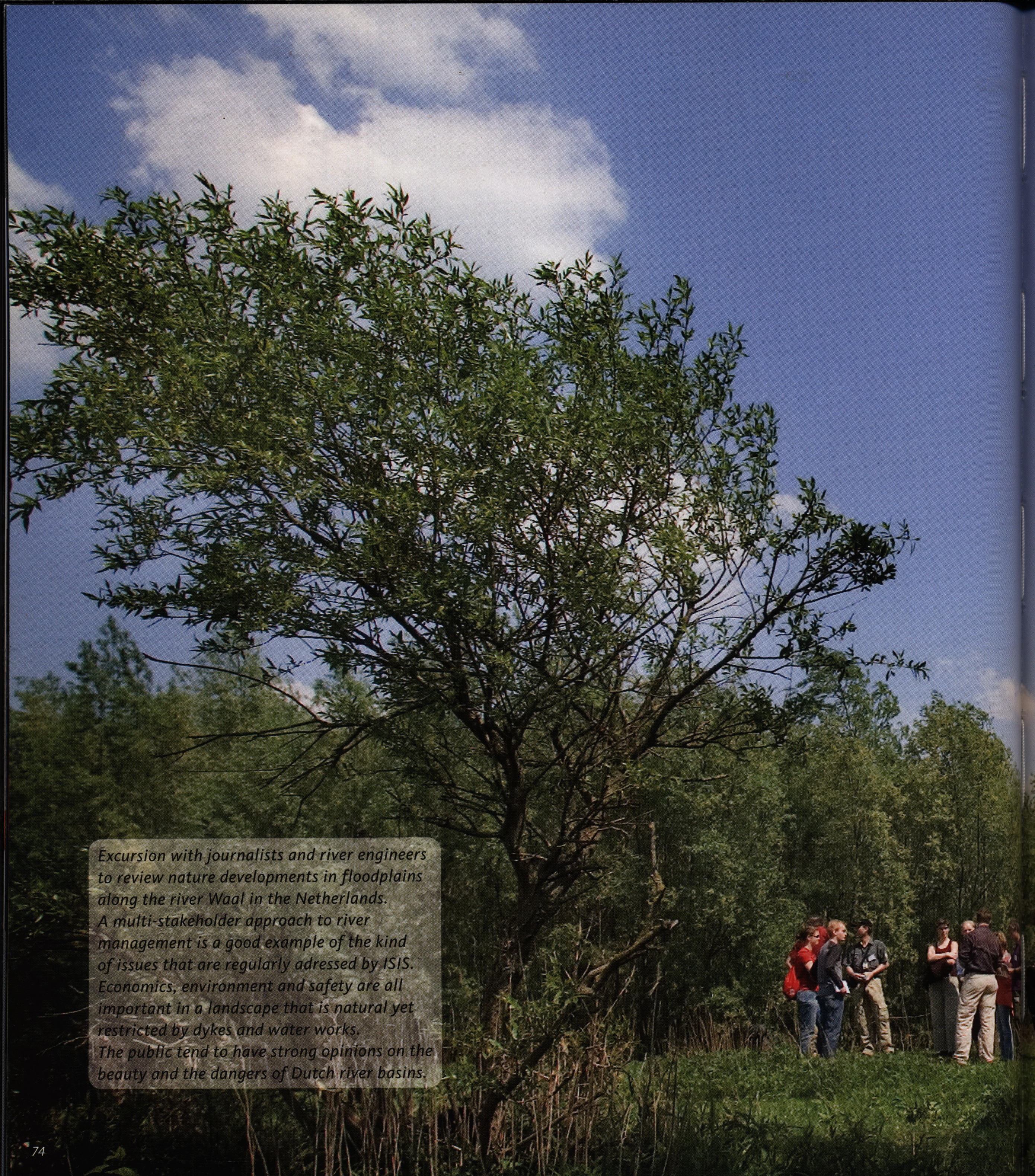

Excursion with journalists and river engineers to review nature developments in floodplains along the river Waal in the Netherlands. A multi-stakeholder approach to river management is a good example of the kind of issues that are regularly adressed by ISIS. Economics, environment and safety are all important in a landscape that is natural yet restricted by dykes and water works. The public tend to have strong opinions on the beauty and the dangers of Dutch river basins.

Society

Out into the wider world

The days are long gone when it was seen as acceptable for scientists to spend their days huddled over benches with their backs to the world as they worked on things they thought might win the Cold War. That's why it's edifying to compare the old buildings on the Heyendaalseweg with the new ones – the difference between 'then' and 'now' could hardly be more symbolic: hermetic grey concrete versus transparent glass and metal. The Huygens building leans out provocatively over a public road as if to symbolize our societal ambitions. Huygens is fittingly surrounded by the buildings of the Mercator Science & Technology Park, where spin-off companies are located.

Glass curtain walls are not enough: the people behind them have to get out into the world, market their knowledge, and forge links with other scientists. The world wants to know and it wants to put knowledge to good use. In short, the societal relevance of teaching and research in the sciences is clear. Doing ground-breaking research has considerable societal impact, as it lays the foundations for the technologies of the future.

However, when it comes to the public's familiarity with developments in the natural sciences – not to mention their respect for them – there's a lot of lost ground to make up. It's a backlog many Faculty members have been working hard to remove through lectures and guided tours, and by hosting and taking part in debates and all manner of other events. These include star-gazing evenings for the general public, autumn-holiday courses for school pupils, a mathematics tournament and in-service training days for secondary-school teachers.

Thanks to initiatives such as these, many more people are now crossing our threshold for the first time, allowing us to communicate not only our fascination with our work, but also its importance to society. That's why we're constantly creating publicity for our work through the media. In the words of one prominent professor: "I've learned that three things are important: doing top quality research, publishing it well in the right places, and then making sure that as many people as possible know about it."

Science and society

We live in a knowledge-based society, where scientific, technological and social developments are closely interrelated and often lead to advances that can revolutionize our lives – as in ICT, genomics and nanotechnology. Equally important, such developments also affect our self-image and the ways in which we see ourselves in relation to the world around us. And, while science and technology clearly have a profound influence on society, the reverse is also true: society significantly shapes the ways in which science and technology evolve, in a process of co-evolution whose exploration has now become one of our Faculty's core objectives.

This is why our Institute for Science, Innovation and Society (ISIS) analyses the interaction between science, technology and society. By hiring professors with leading positions in companies, ISIS also strengthens the links between the Faculty and business. In recent years, the Faculty's activities have led to all sorts of commercial spin-offs. At the moment there are over 30 such companies, which together provide around a thousand jobs. They sell pharmaceutical products and ICT solutions, solve environmental problems and deliver spectographic expertise. Others help doctors to improve their diagnoses or help figure out the most efficient way to distribute newspapers.

Some of these companies have stayed small, servicing niche markets. But others have grown rapidly, becoming too big for the campus and, in some cases, even too big for Nijmegen. Synthon – our largest spin-off company – has an annual turnover of 200 million euro.

Business incubators

It was in these spin-offs that we observed some of the potential pitfalls of a less-than-ideal first job. Because, while an idea and the market for it may look promising, all too often there will be obstacles further down the road. If someone devotes his or her first years in the labour market solely to putting a company on the rails, it's easy for them to miss out on other opportunities that might take their career in another direction. It's precisely for this reason that we're now providing a new type of support for university entrepreneurs: innovation labs.

Here's what they involve: students who have ideas with commercial potential can get professional guidance and develop entrepreneurial skills in an in-house facility. This unique concept allows would-be entrepreneurs to share labs with experienced researchers and use state-of-the-art equipment. Sometimes, of course, the idea might grow into a viable business concept, while the person who pioneered it proves to be better at inventing things than at running a business. In that case, neither the career nor the idea is lost.

New ideas are born in an atmosphere of creative science and inventive technology. Such discoveries should not be restricted to the readers of academic journals – they should benefit society as a whole. This is the main reason why the Faculty stimulates commercial spin-offs. Behind the scenes, in this quiet corner of the Netherlands, breakthrough scientific discoveries are being transformed into innovative ideas that may well fundamentally change the way we live in the future.

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Spring 2007

This book commemorates the official opening of the Huygens building by Her Majesty the Queen of the Netherlands on 8 May 2007.

The building, which houses the Faculty of Science of Radboud University Nijmegen, ushers in a new era for our faculty, which is celebrating its 50th anniversary in 2007.

The building has a wealth of fascinating faces. From the inner world of the smallest particles to the outer reaches of the universe, from the complexity of biomolecules to ecological networks, it will ensure that Nijmegen remains at the cutting edge of science.

Radboud University Nijmegen / Faculty of Science